

Test Specifications Distributor-Type Fuel Injection Pump

46

VDT-WPP 001/4 PEU 2,1 f 1

2. Edition

En

Testoil-ISO 4113

EP/VA 4/90 H 2250 CR 173-3
0 460 394 022

supersedes 5.75

company: **Peugeot**

engine: **XD 4/90 (504 D)**

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers

Test Instructions and Test Equipment
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting **0** mm (see also VDT-WJP 161/4, Suppl. 1)

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	1600	4,8 - 5,2 mm		-
1.2 Supply pump pressure	1600	4,5 - 5,0 kp/cm ²		-
1.3 Full-load delivery without charge-air pressure	1400	37,0 - 38,0 cm ³ /1000 strokes		1,5
Full-load delivery with charge-air pressure	-	- - - cm ³ /1000 strokes		-
1.4 Idle speed regulation	350	5,0 - 11,0 cm ³ /1000 strokes		3,0
1.5 Start	50	mind. 50 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2300	21,0 - 27,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	700	2000	2050-2250 (2020-2280)
	mm	1,0-2,0 (0,7-2,3)	5,7-6,7 (5,4-7,0)	End (6,1-6,8)
2.2 Supply pump	rev/min	200	1600	2000
	kp/cm ²	1,1-1,6 (0,9-1,8)	(4,3-5,2)	5,5-6,0 (5,3-6,2)
Overflow delivery	rev/min	500	1600	2250
	cm ³ /10 s	70-140 (65-145)	70-140 (65-145)	70-140 (65-145)
2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	2350-2400 (2330-2420)	10,0	
		2300	(20,0-28,0)	
		2200	33,0-35,5 (32,5-36,0)	
		1400	(36,5-38,5)	
		500	28,0-31,0 (27,0-32,0)	
	Stop	2250	0	
Idle stop	Full	660-800 (640-820)	0	
		350	(4,0-12,0)	
		50	mind. 50	

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1.86

A1

A1

Angle to the stop-plate		Pre-setting dimensions	
Pump	173-3	Pump	173-3
α	$30 \pm 4^\circ$	Dimension IV	1,0
β	$52 \pm 5^\circ$	Dimension V	25,0
γ	$10 (+ 2-6^\circ)$		
δ	max. 50°		

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 SOF 2,5 n

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2100 R 22-7

0 460 494 189

supersedes

company Sofim

engine: 8 144.67.220

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1800	7,6-8,0 mm		
1.2 Supply pump pressure	1800	6,3-6,9 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery with charge-air pressure	2000	37,5-38,5 cm ³ /1000 strokes		2,5 (3,0)
1.4 Idle speed regulation	370	8,0-12,0 cm ³ /1000 strokes		2,5 (3,0)
1.5 Start	2350	19,0-25,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	100	min. 55 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 0,9-1,7 (0,6-2,0)	1800 (7,1-8,5)	2000 8,3-9,1 (8,0-9,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,2-3,8	2000 6,7-7,3	
Overflow delivery	n = rev/min cm ³ /10 s		2100 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2350 2100 2000 1100 600	max. 4,5 (18,0-26,0) 36,7-39,3 (35,7-40,3) (35,7-40,3) 43,5-46,5 (42,7-47,3) 35,3-38,3 (33,8-39,8)	
switch-off			
Idle stop	370 420 500	(6,0-14,0) min. 1,5 max. 3,0	
End stop	400 480	min. 3,7 32,0-38,0	
2.4 Solenoid	cut-in voltage test voltage	min. 10 V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,4-5,7
MS	1,7-1,9
SVS	
A	
B	

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 MAN 5,6p3

En 1. Edition

Testoil-ISO 4113

 VE 6/12 F 750 R 139-1
 0 460 426 065

supersedes -

company: MAN

engine: DO 226 MLE

Overflow temperature 45° C 102 kW/1500 1/min

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	700	4,3-4,7 mm		
1.2 Supply pump pressure	700	6,2-6,8 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery with charge-air pressure	700	122,0-123,0 cm ³ /1000 strokes		4,0 (4,5)
1.4 Idle speed regulation	350	12,0-18,0 cm ³ /1000 strokes		3,5 (4,5)
1.5 Start	750	100,5-104,5 cm ³ /1000 strokes		
1.6 Full-load speed regulation	100	min. 70,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	300 2,0-2,8(1,7-3,1)	500 3,2-4,0(2,9-4,3)	700 (3,8-5,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	300 4,2-4,8	500 5,2-5,8	
Overflow delivery	n = rev/min cm ³ /10 s	300 42-83(27-98)	750 55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	800 785 750 700 500 300	max. 2,5 11,0-19,0 (10,0-20,0) (97,5-107,5) (119,5-125,5) 113,0-117,0(111,3-118,7) 102,1-107,1(100,9-108,3)	
switch-off			
Idle stop	350 400 430 180 280	(10,0-20,0) 1,5-9,5 (0,5-10,5) max. 4,0 min. 105,0 max. 110,0	
End stop			

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-6,0
MS	1,0-1,2
SVS	
A	
B	

 Observations
 pushing electromagnet
 24 V

2.4 Solenoid	cut-in voltage test voltage
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Test Specifications

Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w1

En

1. Edition

Testoil-ISO 4113

PES 6 M 55 C 320 RS 156
 RSF 315/2300 M 59-5
 0 400 076 990
 1- 5- 3- 6- 2- 4
 0-60-120-180-240-300

supersedes

company **Daimler Benz**
 engine **OM 603**
80 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Note: Before starting testing, observe the important instructions on the reverse.

Port closing at prestroke

 2,00-2,10
 (1,95-2,15)

mm (from BDC)

20-22

Control rod travel

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25(0,3)			
290	5,4-5,6	0,55-0,65	0,1(0,15)			

Set uniform delivery according to the values in .

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 7,0	220	50	⑦ 10,6-10,8	2200		⑫ 100	min. 20,1
	② 5,4-5,6	290		⑧ 7,8-8,2	2500		⑬ 1800	10,9-11,1
	③ 4,2-4,4	360**		⑨ -			⑭ 1000	11,3-11,4
	④ -			⑩ 0-1,0	2950			
	⑤ 1,5	620-720		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑰		Full-load speed regulation ⑱a	Variations in fuel delivery ⑰		Starting fuel delivery idle		Difference cm ³ /1000 strokes
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 ⑫a
					290	5,5-6,5 (5,0-9,5)	1,0 (1,5)
			1000	31,5-32,5 (30,5-33,5)	2500	22,0-26,0 (21,0-27,0)	2,5 See ⑮ (3,0) Point 8 a ⑯

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

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1. ** Checking of idle-auxiliary spring; setting at $n = 360$ 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49° , after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.

Control-lever position 46.5° , after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop.

At $n = 290$ min⁻¹ and $p_u = 450$ mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

- Control lever up against idle stop

At $n = 315$ 1/min, $I = 1.8$ A, control-rod travel = (12,6-14,0) mm, fuel delivery (32,0-40,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At $n = 2950$ 1/min, $I = 3$ A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At $n = 100$ 1/min, $I = 1.8$ A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 6,0 V

2. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004
 RQV 300-1150 MW 54
 0 403 446 148
 1- 5- 3- 6- 2- 4
 0-60-120-180-240-300 \pm 0,50 (0,75)

supersedes 10.84
 company: Volvo BM
 engine: TD 60 LLK
 125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,80-2,90$
 (2,75-2,95) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,5+0,1	9,6-9,8	0,35(0,6)			
300	5,0-5,1	1,0-1,4	0,35(0,55)			
1000	11,5+0,1		0,5 (0,7)			
700	10,7+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150 1300	15,2-17,8 0-1,0				ca. 14	300 100	5,0-5,1 min. 6,8	1100 700 300	8,4-8,6 3,6-3,8 1,0-1,5
ca. 51	10,5 4,0	1190-1200 1245-1275				3a	320-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 96,0-98,0 (94,0-100,0)	1190-1200*	LDA 1000	0,7 bar 98,0-102,0 (95,5-104,5)	100	130,0-140,0 (127,0-143,0)		
			LDA 700	0 bar 82,0-84,0 (79,5-86,5)	300	10,0-14,0 (7,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1004 mit MW 54	0,38	0 0,45 0,70	10,8-10,9 10,7-10,8 11,3-11,4 11,5-11,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Note: Check magnet with 24 V.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6 h

3. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 500-1250 MW 2/312
O 403 476 014

supersedes 8.83
company IHC
engine DT 466 B
154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10
(3,95-4,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,6±0,1	10,0-10,2	0,35 (0,6)			
500	5,4-5,5	1,9-2,3	0,35 (0,55)			
1250	11,6±0,1		0,65 (0,7)			

DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 29	500	5,4-5,5		
							100	min. 19		
ca. 53,5 + 2,5 2a		1280-1300 = 10,6 1370-1380 = 4,0 1560 = 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	rev/min 5	cm ³ /1000 strokes	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
800	100,5-102,5 (98,5-104,5)			1250	102,5-106,5 (100,5-108,5)	100	140-180 (137-183)		
						500	19-23 (16,5-25,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

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11.85

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than $n = 500$ 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 IHC 7,6p1
1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 350-1250 MW 2/312-1
0 403 476 021
1-5-3-6-2-4 je 60°

supersedes
company IHC
engine DT 466 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10
(3,95-4,15) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,2+0,1	8,1-8,3	0,35(0,6)			
350	5,7-5,8	1,9-2,3	0,35(0,55)			
1250	9,2-9,3		0,65(0,7)			

DHK 1 688 901 016 207+3 bar
Fuel injection test tubing 1 680 750 008

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.29	350	5,7-5,8	850	10,2-10,3
							100	min.19	1200	9,3-9,4
ca. 57,5 +2,5 ②a		1290-1300=8,2 1365-1375=4,0 1450=0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
800	81,0-83,0 (79,0-85,0)		1250	74,5-76,5 (72,5-78,5)	100	140-180 (137-183)			
					350	19-23 (16,5-25,5)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6p1

-2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- In unlocked state do not run at greater than n = 500 1/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6p3

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 350-1200 MW 2/312-2
0 403 476 022
-5-3-6-2-4 je *60°

supersedes -
company IHC
engine DT 466 C
109 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

Port closing at prestroke (3,95-4,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
800	9,6-9,7	7,3-7,5	0,35 (0,6)			
350	5,7-5,8	1,9-2,3	0,35 (0,55)			
1200	8,9-9,0		0,65 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 29	350	5,7-5,8	1100	8,9-9,0
ca. 55,5 ± 2,5							100	min. 19	850	9,6-9,7
2a		1240-1250 = 7,9 1295-1305 = 4,0 1400 = 0 - 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
800	73,0-75,0 (71,0-77,0)			1200	68,5-70,5 (65,5-74,5)	100	140-180 (137-183)		
						350	19-23 (16,5-25,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

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A13

A13

Notes:

- Set pump only with original overflow valve and 1H hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 1/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6p

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 350-1250 MW 2/312-3
0 403 476 023
1-5-3-6-2-4 je 60°

supersedes
company IHC
engine DT 466 C
114 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 mm (from BDC) $RW = 9-12$ mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,3-10,4	8,05-8,25	0,35 (0,6)			
350	5,7-5,8	1,9-2,3	0,35 (0,55)			
1250	9,1-9,2		0,65 (0,7)			
DHK 1 688 901 016 207+3 bar Fuel injection test tubing 1 680 750 008						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees rev/min 7 8		③ Torque control Control rod travel rev/min mm 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3							
loose	800	0,3-1,0				ca. 29	350	5,7-5,8	1150
							100	min. 19	850
ca. 57,5 ±2,5 ②a		1290-1300 = 8,1 1350-1360 = 4,0 1475 = 0,3-1,7							
									9,1-9,2 10,3-10,4

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note: changed to ... rev/min 3		③a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
	cm ³ /1000 strokes 2								
800	80,5-82,5 (78,5-84,5)			1250	69,0-71,0 (66,0-74,0)	100	140-180 (137-183)		
						350	19-23 (16,5-25,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

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A15

A15

D. Adjustment Test for Manifold Pressure Compensator

IHC 7,6p

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 1/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 IHC 7,6k
En 3. Edition

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 415-1200 MW 2/313
0 403 476 015
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersege 8.83
company IHC
engine DT 466 B
158 kW

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 mm (from BDC) RW = 9,0 - 12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,1-12,2	11,2-11,4	0,35(0,6)			
415	5,1-5,3	1,6-2,0	0,35(0,55)			
1200	11,3-11,4		0,65(0,7)			
500	10,3-10,4					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.24	415	5,2	1100	11,3-11,4
ca. 51,5 ± 2,5							415 100	5,1-5,3 min. 19	950	12,0-12,1
②a		1235-1255=10,3 1325-1335= 4,0 1475=0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
LDA 900	0,9 bar 112,0-114,0 (110,0-116,0)		LDA 1200	0,9 bar 105,0-109,0 (103,0-111,0)		100	140-180 (137-183)		
			LDA 500	0 bar 83,0-85,0 (81,0-87,0)		415	16,0-20,0 (13,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

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11.85

A17

A17

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing
increasing pressure - in bar gauge pressure

IHC 7,6k

-2-

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
RS 1109 mit MW 2/313	0,28	0,57 0 0,90	10,8-10,9 11,5-11,8 10,3-10,4 12,1-12,2	

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6p4

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109
RSV 350-1250 MW 2/313-3
0 403 476 030
1-5-3-6-2-4 je 60°

supersedes ~
company IHC
DTI 466 C
engine 160 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$ mm (from BDC) RW = 9,0 - 12,0 mm
(3,90-4,10)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
800	13,4+0,1	11,65-11,85	0,35 (0,6)			
350	6,3-6,4	1,8-2,3	0,35(0,55)			
1250	12,2+0,1		0,65 (0,7)			
500	11,4+0,1	DHK 1 688 901 016/207 + 3 bar Fuel injection test tubing 1 680 750 008				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Control lever deflection in degrees		Lower rated speed		3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel						rev/min	Control rod travel	rev/min	Control rod travel
1	mm	mm rev/min	4	5	6	7		8	mm	10	mm
loose	800	0,3-1,0				ca. 24		350	6,3-6,4	800	13,4-13,5
								100	min. 19	1250	12,2-12,3
ca. 54 ± 2,5		1290-1300 = 11,2								840	13,4-13,5
2a		1390-1400 = 4,0								1200	12,2-12,3
		1470 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 800	0,9 bar 116,5-118,5 (114,5-120,5)			LDA 1250	0,9 bar 105,0-107,0 (103,0-109,0)	100	140-180 (137-183)		1,5-2,0 mm
				LDA 500	0 bar 82,0-84,0 (79,0-87,0)	350	18,0-23,0 (16,5-25,5)		vor Stop

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

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D. Adjustment Test for Manifold Pressure Compensator

IHC 7,6p4 -2-

Test at $n =$ 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1109 mit MW 2/313-3	0,2	0 0,49 0,90	11,8-11,9 11,4-11,5 12,8-12,9 13,4-13,5

Notes:

(1) when $n =$ rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 1/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6x4

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1121
RSV 500-1250 MW 2/312-5
0 403 476 047

supersedes
IHC
company DTI-466 C
engine 167 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3.95-4.05$ mm (from BDC) RW = 9,0 - 12,0 mm
(3.90-4.10)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	10.9+0.1	10.6-10.8	0.35(0.6)			
500	5.4-5.5	1.6-2.0	0.35(0.5)			
1250	10.9+0.1		0.65(0.7)			

DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0.3-1.0				ca. 28	500	5.4-5.5		
ca. 57.5 ±2.5							100	min. 19		
2a		1295-1305=9.9 1365-1375=4.0 1400=0.3-1.7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
950	106.0-108.0 (104.0-110.0)		1250	108.0-112.0 (106.0-114.0)		100	140-180 (137-183)		
						500	16.0-20.0 (13.5-22.5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing
increasing pressure - in bar gauge pressure

IHC 7,6r4

-2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Hinweise:

- Pumpeneinstellung nur mit Orig.-Überströmventil und IH-Schlauch mit Drossel 1.2 mm Durchmesser durchführen.
- FB-Anriß-Stophebel um 25 Grad Richtung Stop RW \approx 9-12 mm (Leerweg vom Stophebel muß vorher überwunden sein).
- Im entriegelten Zustand darf nicht größer n \approx 500 1/min gefahren werden.
- Unteren Leerlauf an Anschlagschraube einstellen.
- Stopanschlag 1.5 - 2.0 mm vor Stop einstellen
- Hydr. Startverriegelung mit 1.5 bar Luft prüfen.
- Leerlaufzusatzfeder im oberen Leerlauf bei 4 mm RW berührend anstellen und 1 Umdrehung zurück.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6r5

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1121
RSV 450-1200 MW 2 A 313-1
0 403 476 024
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes IHC
company DTI-466 C
engine 175 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$ mm (from BDC) $RW = 9,0 - 12,0$ mm
(3,90-4,10)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,3-12,4	12,2-12,4	0,35(0,6)			
450	5,7-5,8	1,8-2,2	0,35(0,5)			
1200	11,9+0,1		0,65(0,7)			
500	10,7+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
Loose	800	0,3-1,0				ca. 22	450	5,7-5,8	1200	11,9-12,0
							100	min. 19	1150	11,9-12,0
ca. 47,5	1240-1250=10,9								800	12,3-12,4
2,5	1320-1330=4,0								600	12,3-12,5
28	1400=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
LDA 800	0,9 bar 122,0-124,0 (120,0-126,0)		LDA 1200	0,9 bar 118,0-120,0 (116,0-122,0)		100	140-180 (137-183)		
			LDA 500	0 bar 91,0-93,0 (89,0-95,0)		450	18,0-22,0 (15,5-24,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

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11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

IHC 7,6r5 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
RS 1121 mit MW 2 A 313-1	0.54	0 0.26 0.90	11.9-12.0 10.7-10.8 11.1-11.2 12.3-12.4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel ≈ 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 c

2. Edition

En

PE 8 P 120 A 620/4 LS 325 RSUV 250-800 P 10 A 318 R

supersedes 6.83

Komb.-Nr. 0 401 878 091

company KHD

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$

engine

BA 8 M 816

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29,2-30,2)	0,5(0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	250	5,9	800	14,9-15,0
	$\chi = 4,0$								300	16,2-16,8
									450	14,9-15,0
ca. 53	13,9	840-850								
2a	4,0	860-910								
	1050	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ...				Idle					
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9			
Not known.		840-850 *		-		-		-		-	
Adjust according to		the engine		records.							

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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B1

B1

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 IHC 7,6r3

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1121
RSV 450-1200 MW 2 A 313-2
O 403 476 025
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes IHC
company DTI-466 C
engine 156,6 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$
 $(3,90-4,10)$ mm (from BDCRW=9-12 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,6+0,1	10,85-11,05	0,35(0,6)			
450	4,8-4,9	1,8-2,2	0,35(0,5)			
1200	9,9-10,0		0,65(0,7)			
500	9,0-9,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 30	450	4,8-4,9	1200	9,9-10,0
							100	min.19	850	10,6-10,7
									800	10,3-10,7
ca. 59,5	1260-1270=8,9									
②a 2,5	1355-1365=4,0									
	1400=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
LDA 800	0,9 bar 108,5-110,5 (106,5-112,5)		LDA 1200	0,9 bar 102,5-104,5 (116,0-122,0)		100	140-180 (137-183)		
			LDA 500	0 bar 78,0-80,0 (76,0-82,0)		450	18,0-22,0 (15,5-24,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

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11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6r3

-2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1121 mit MW 2 A 313-2	0.57	0 0.32 0.90	10,2-10,3 9,0-9,1 9,3-9,4 10,6-10,7

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- In unlocked state do not run at greater than n = 500 1/min.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6r2

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1122
RSV 350-1050 MW 2/312-4
0 403 476 026
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes
company IHC
engine DT 466
118 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$
(3,90-4,10) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	10,2-10,4	0,35 (0,6)			
350	6,2-6,3	1,3-1,7	0,35 (0,55)			
1050	11,9-12,0		0,65 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min Control rod travel 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3								
loose	800	0,3-1,0				ca. 19	350	6,2-6,3	1050	11,9-12,0
ca. 41							100	min. 19	700	13,0-13,1
± 3									600	13,3-13,6
2a	1090-1100 = 11,1 1155-1165 = 4,0 1200 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
700	102,0-104,0 (100,0-106,0)			1050	91,0-93,0 (88,0-96,0)	100	140-180 (137-183)		
						350	13,0-17,0 (10,5-19,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

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Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark - stop lever by 25° toward shutoff - control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than $n = 500$ 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MB 6,0 d 9

2. Edition

En

Testoil-ISO 4113

PES 6 MW 100/720 RS 1131
 RQV 300-1300 MW 50-1
 0 403 446 158
 1-5-3-6-2-4 je 60°

supersedes 11.85

company: Daimler-Benz

engine: OM 366 LA

150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

 Port closing at prestroke $\begin{pmatrix} 3,70-3,80 \\ 3,65-3,85 \end{pmatrix}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,3+0,1	9,35-9,55	0,35(0,6)			
300	6,1-6,2	1,0 - 1,4	0,35(0,55)			
600			0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1340 1550	15,2-17,8 0- 1,0				ca. 15	100 300	min. 7,6 6,1 -6,2		
ca. 52	11,3 4,0	1340-1350 1440-1470				3a	350-550			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 93,5-95,5 (91,5-97,5)	1340-1350*	LDA 600	0,7 bar 87,5-91,5 (85,5-93,5)	100	80,0-90,0 (77,0-93,0)		
			LDA 500	0 bar 56,5-58,5 (54,5-60,5)	300	10,0-14 (7,5-16,5)		
					100-220	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MB 6,0dg

-2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1131 mit RQV..MW 50-1	0,17	0,22 0 0,70	10,8-11,0 11,9-12,2 10,6-10,7 12,3-12,4

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 DAF 11,6 k 17

1. Edition

En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P 5 A 508-2
Komb.-Nr. 0 401 876 311
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes=
company DAF
engine DKX 1160
243 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,4-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control-lever deflection in degrees		Control rod travel		Control rod travel
1	mm	mm rev/min	4	5	6	7	rev/min	mm	rev/min	mm
loose	800	0,3-0,7	-	-	-	ca. 24	250	6,0	850	11,6-11,7
	x = 5,0								400	11,6-11,8
ca. 54	10,4	1140-1150					250 640-700	6,4-6,6 = 2,0	300	11,9-12,4
	4,0	1270-1300								
②a	1425	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note: changed to ... rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		④a Idle stop Control rod travel mm 9	
LDA 850	cm ³ /1000 strokes 2	1140-1150*		LDA 600	cm ³ /1000 strokes 5	100	315,0-355,0 (311,0-359,0)		
	0,7 bar 183,5-185,5 (180,5-188,5)				0 bar 135,5-137,5 (132,5-140,5)				
						250	11,0-15,0 (8,0-18,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k 17

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 372-1 Y + RSV..P 5 A 508-2	0,70	0 0,37 0,30	11,4-11,5 10,0-10,1 11,0-11,1 10,5-10,9

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 1 6
4. Edition

En

PES 6 P 120 A 320 LS 403 RQ 250/1100 PA 487 R
Komb.-Nr. 0 402 046 198
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 9.84
company: MAN
engine: D 2566 MKUL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,0-3,1 \\ (2,95-3,15) \end{matrix}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,0-14,0	21,5-21,7	0,5(0,9)			
250	6,3-6,5	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100 min. 7,9	750	13,0-13,1	
	VH=max. 46°			4,0	1185-1215			250 6,3-6,5	100	11,3-11,4	
				1300	0-1,0			335-375=2,0	925	12,5-12,7	
									1005	11,7-12,0	

Torque-control travel
on flyweight assembly dimension a = 0,55 mm

Speed regulation: AI

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7
LDA	1,0 bar			LDA	0,29 bar	100	205,0-245,0
750	215,0-217,0			500	134,0-140,0		(201,0-249,0)
	(212,0-220,0)				(131,0-143,0)		
1100	177,0-183,0						
	(174,0-186,0)						
650	206,0-212,0			LDA	0 bar		
	(203,0-215,0)			500	111,0-113,0		
					(108,0-116,0)		

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 1 6

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6P..LS 403 + RQ..PA 487 R	1,0	0 0,29 0,58	13,0-13,1 9,7-9,8 10,7-10,8 12,4-12,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 v 3

1. Edition

En

PE 6 P 110 A 320 RS 407-1

RSV 275-1000 P 5 A 508-7

supersedes

company DAF

Komb.-Nr. 0 401 876 307

engine DKFL 1160

185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	12,8+0,1	15,2-15,4	0,4 (0,75)			
275	7,0-7,2	0,9-1,4	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 25	275	6,6	600	13,0-13,1
	$x = 5,0$						275	7,0-7,2	1000	12,1-12,3
							700-760	= 2,0	790	12,6-12,8
ca. 50	11,1	1040-1050							865	12,2-12,5
2a	4,0	1195-1225								
	1360	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 600	0,7 bar 151,5-153,5 (149,0-156,0)	1040-1050 *		LDA 1000	0,7 bar 136,0-140,0 (133,0-143,0)	100	245,0-285,0 (241,0-289,0)	-	-
				LDA 600	0 bar 137,0-139,0 (134,5-141,5)	275	9,0-14,0 (6,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 v 3 - 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6P..RS 407-1 +RSV..P5A 508-7	0,70	0 0,30 0,26	12,8-12,9 12,1-12,2 12,6-12,7 12,3-12,5

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 80 A 720 LS 425 RQV 300-1000 PA 577-1

Komb.-Nr. 9 400 087 285

supersedes-

 company: Caterpillar
 engine: 3306 BA
 125 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $1,95-2,05$ mm (from BDC)
 $(1,90-2,10)$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	12,0+0,1	9,7-9,8	0,25 (0,4)			
300	6,8-7,0	0,9-1,6	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 16	200	min. 11,0		
ca. 69	11,0 4,0 1180	1020-1030 1090-1120 0 - 1,0			220-370		300 490-550 = 2,0	6,4-6,6		

Torque control travel a = 0,75 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5)		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
990	97,0-98,0 (95,5-99,5)	1020-1030 *	700	103,0-105,0 (102,0-106,0)	100	152,0-172,0 =17,6-18,6 mm RW	990	2,0+0,1
			500	101,0-103,0 (100,0-104,0)			850	2,2+0,3
							700	2,5+0,2
							500	2,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,4 1 15

1. Edition

En

PES 6 P 110 A 820 LS 442-1
Komb.-Nr. 0 402 076 055

RSV 300-1100 POA 485-2

supersedes -
company: Daimler-Benz
engine: OM 407
122 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,2-3,3}{(3,15-3,35)}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	8,6-8,7	8,0-8,2	0,4 (0,8)			
300	7,7-7,9	1,4-2,0	0,4 (0,7)			
600	-	C, Sp. 4 u. 5	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 28	300	7,8	1100	8,6-8,7
	X =								600	9,8-10,0
ca. 54	7,6	1130-1140					300	7,7-7,9	750	9,4-9,6
②a	4,0	1170-1200						**	950	8,8-9,0
	1350	0,3-1,4	**Set idle-speed auxiliary spring at 2 mm control-rod travel							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	80,0-82,0 (77,5-84,5)	1130-1140*		600	75,0-79,0 (72,0-82,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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Testoil-ISO 4113

B15

B15

Test Specifications Fuel Injection Pumps and Governors

① NPP 001/4 CAT 10,5 a 3

1. Edition

En

PES 6 P 80 A 720 LS 456 RQV 350-1000 PA 609-5

Komb.-Nr. 9 400 087 325

supersedes -

company: Caterpillar

engine: 3306 T

150 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,65-1,75$ mm (from BDC) RW = 9,0 - 12,0 mm
(1.60-1.80)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	12,5+0,1	11,1-11,2	0,2 (0,35)			
350	6,7-6,9	1,0-1,7	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1010	15,2-17,8	-	-	-	ca. 17	250	min. 11,0	325	0,5-2,0
ca. 69	11,5	1020-1030					350	5,9-6,1	400	2,7-3,1
	4,0	1090-1120					510-570	= 2,0	500	3,5-4,2
	1220	0 - 1,0				300-400			800	6,1-6,6
						③a			1010	8,5

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
990	111,0-112,0 (109,5-113,5)	1020-1030*	500	117,0-119,0 (116,0-120,0)	100	152,0-172,0 =17,6-18,6 mm RW	990	12,5+0,1
			700	114,5-116,5 (113,5-117,5)			500	13,5+0,1
							700	13,4+0,2
							850	12,8+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5±

1. Edition

En

PES 6 P 80 A 720 LS 456
Komb.-Nr. 9 400 087 280

RQV 400-1100 PA 626

supersedes
company: Caterpillar
engine: 3306 T
170 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,65-1,75}{(1,60-1,80)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,3+0,1	12,5-12,6	0,25(0,4)			
400	6,6-6,8	0,9-1,6	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 20	250	min. 11,0		
ca. 69	12,3 4,0 1350	1130-1140 1230-1260 0-1,0				350-450	400 530-580 = 2,0			

Torque control travel a = 0,50mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	125,0-126,0 (123,5-127,5)	1130-1140*	700 500	121,0-123,0 (120,0-124,0) 119,0-121,0 (118,0-122,0)	100	152,0-172,0 = 17,6-18,6 mm RW	1100 950 700 500	13,3+0,1 13,5+0,3 13,7+0,2 13,8+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 11,8 a

1. Edition

En

PE 8 P 110 A 320 RS 467 RSV 350-1150 P 1/503
Komb.-Nr. 9 400 087 288

supersedes
company MWM
D 232 V 8
engine

1- 8- 5- 4 - 7 - 2 - 3 - 6
0-30-90-120-180-210-270-300° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 mm (from BDC) RW=9,0-12,0 mm
(2,75-2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,2±0,1	13,7-14,0	0,4 (0,75)			
350	6,4-6,6	1,1-1,6	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7			Lower rated speed rev/min 8			3 Torque control rev/min 10		Control rod travel mm 11	
loose	Control rod travel mm 2	Control rod travel mm rev/min 3	-	-	-	ca. 22			350	6,0		1150	12,2-12,3	600	12,2-12,4
	x = 4,0														
	11,2	1190-1200													
ca. 57	4,0	1235-1265							100	min. 19,0		400	13,4-14,0		
	1350	0,3-1,7													
2a									350	6,4-6,6					
									400-450	= 2,0					

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
1150	cm ³ /1000 strokes 2	1190-1200*	600	cm ³ /1000 strokes 5	134,0-138,0 (131,0-141,0)	100	cm ³ /1000 strokes 7	19,0-21,0 mm RW	-	-	-
	136,5-139,5 (134,0-142,0)										

Checking values in brackets

* 1 mm less control rod travel than col 2

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1.86

B18

818

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 L
3. Edition

En

PE 6 P 120 A 320 RS 474 RQV 275-1200 PA 425-3

Komb.-Nr. 0 401 846 499

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84

company: RVI

engine: MIDS 0620 30
168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6}
(3,45-3,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1200	11,9+0,1	14,8-15,0	0,5(0,9)			
275	5,7-6,0	0,8-1,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1270	15,2-17,8	-	-	-	ca. 12	200	min. 8,4	275	1,2-1,4
ca. 65	11,6 4,0 1500	1265-1275 1380-1410 0-1,0					275	5,7-5,9	400 900 1200	2,9-3,4 5,8-6,0 7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	8	9
LDA 1200	0,7 bar 151,0-153,0 (148,0-156,0)	1265-1275*	LDA 750	0,7 bar 139,0-145,0 (136,0-148,0)	100	105,0-125,0 (101,0-129,0)	-
			LDA 500	0 bar 94,0- 96,0 (91,0- 99,0)			-

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

Testoil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

RVI 8,8 1

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P .. RS 474 + RQV..PA 425-3	0,70		11,9-12,0
		0	10,7-10,8
		0,20	11,0-11,7
		0,16	11,1-11,3

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 110 A 720/3 LS 477-2
Komb.-Nr. 0 402 036 054

RQ 250/1100 PA 685-1

supersedes

company: MAN

engine: D 2866 UH/200
147 kW/2200 min⁻¹
MAN-Nr.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,5-3,6}{(3,45-3,65)}$ mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,5±0,1	9,1-9,4	0,4(0,75)			
250	6,0-6,2	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11		Control rod travel mm 12
600	15,6-16,4	600	16,0	9,5 4,0 1300	1145-1160 1200-1230 0-1,0	250	6,1	100 250 370-410 = 2,0	min.7,6 6,0-6,2	1100 500	10,7-10,8 10,7-10,9	

Torque-control travel
on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7
800	91,0-94,0 (88,5-96,5)	-	-	1100 500	103,0-107,0 (100,0-110,0) 81,0-85,0 (78,0-88,0)	100 250	110,0-130,0 (106,0-134,0) 15,0-20,0 (12,5-22,5)	

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors.

40

WPP 001/4 KHD 40,5 g 2

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-750 P 8 A 322 R

supersedes -

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 132

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{2,0-2,1}{(1,95-2,15)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0±0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,7	750	15,0-15,1
	X = 4,0						300	5,6-5,8	280	16,2-16,8
							300-350	2,0	450	15,0-15,1
ca. 63	14,0	790-800								
②a	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests.

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request.		790-800*		-	-	-	-	-	-
Pumps operates in tandem.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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B22

B22

Test Specifications Fuel Injection Pumps ② and Governors

PE 5 P 100 A 720 PS 491 RQ 300/1100 PA 269-1 R

Komb.-Nr. 9 400 087 329

1-2-4-5-3 je $72^{\circ} \pm 0,5^{\circ}$ ($\pm 0,75^{\circ}$)

supersedes_

company: Daimler-Benz

engine: OM 355-5
200 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,5-3,6$ mm (from BDC) $RW = 9,0-12,0$ mm
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	12,5-12,7	0,35(0,6)			
300	8,1-8,3	1,7-2,3	0,35(0,55)			
600	-	C, Sp. 4 u. 5	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,4-13,9	600	13,6	11,7 4,0 1350	1145-1160 1190-1220 0 - 1,5	300	8,1	100 300 375-415	min. 9,7 8,0-8,2 = 2,0	-	-

Torque-control travel
on flyweight assembly dimension \pm Speed regulation $1145-1160$ min1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③		Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1100	125,0-127,0 (123,0-129,0)	-		600	117,0-121,0 (114,5-123,5)	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

2.86

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 7,1 b1

1. Edition

En

PE 6 P 110 A 320 RS 492 RSV 650-750 P4/421-2

Komb.-Nr. 0 401 876 314

supersedes

company Volvo-Penta

engine TJD 71 G
153 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1
(2,95-3,15) mm (from BDC) RW=9,0-12,0 mm

Test oil ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,7+0,1	15,8-16,0	0,4(0,75)			
650	4,9-5,1	1,6- 2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees rev/min 8 9			3 Torque control rev/min 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9			Control rod travel mm 11	
loose	800	0,3-1,0	-	-	-	ca. 32	650	6,1	-	-
	x = 2,25						650	6,0-6,2		
ca. 37	12,7	750-755					660-700	2,0		
2a	4,0	775-785								
	930	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		Control rod travel mm 9
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7				
700	158,0-160,0 (155,0-153,0)	750-755*	-	-	-	-	-	-	-	-
						650	6,0-6,2 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

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B24

B24

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 20,9 e 4

1. Edition

En

PE 12 P 110 A 520 LS 838-1

RQ 750 PA 664

Komb.-Nr. 0 401 840 089

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes-

company: MAN

engine: D 2542 MTE

283 kW/1500

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

3,0-3,1
(2,95-3,15)

mm (from BDC)

Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	14,9-15,2	0,4(0,75)			
250	3,8-4,0	1,4-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,3 4,0 900	750-755 776-788 0-1,0	-	-	-	-	-	-

Torque-control travel

on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
700	149,0-152,0 (146,5-154,5)	-		-	-	-	-

Checking values in brackets

12.85

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Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 KHD 19,0 p

1. Edition

En

Testoil-ISO 4113

PE 12 P 110 A 920 LS 3081

RQV 300-1075 PA 588

supersedes

Komb.-Nr. 0 401 840 703

company: KHD

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12

engine: BF 12 L 413 FC

0-45-60-105-120-135-180-195-240-255-300-315⁰ ± 0,5⁰ (± 0,75⁰)320 kW/2150 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8-2,9
(2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	11,2+0,1	13,0 - 13,4	0,4 (0,8)			
300	6,7-6,9	1,6 - 2,2	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 13	100	min. 8,3	250	0,6-0,8
ca. 65	10,2	1115-1125					300	6,7-6,9	525	3,5-3,7
	4,0	1175-1205							800	5,8-6,0
	1300	0-1,0				350-500			1075	8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1075	0,75 bar 130,0-134,0 (128,0-136,0)	1115 - 1125*	LDA 850	0,75 bar 129,0-133,0 (126,0-136,0)	100	130,0-150,0	-	-
			LDA 500	0 bar 82,0-84,0 (78,0-88,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

KHD 19,0 p

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 12 P..LS 3081 mit.. PA 588	0,75	0 0,35 0,23	11,2-11,3 9,2-9,3 10,4-10,5 9,6-9,8

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 g

3. Edition

En

US-PES 6 P 110 A 720 RS 3083 US-RSV 400-1050 P2/488-1

Komb.-Nr. 9 400 231 175

supersedes 11.85
company John Deere
engine 6466 A
168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,4+0,1	14,7-15,0	0,4(0,75)			
400	6,6-6,8	1,4-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	400	6,2	1050	12,4-12,5
	X=						100	min. 19,0	700	13,6-13,9
							400	6,6-6,8		
							660-720	2,0		
ca. 45	11,4	1095-1105								
2a	4,0	1185-1215								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1095-1105*		LDA	1,2 bar	100	156,0-176,0	400	6,7
1050	146,5-149,5			700	179,0-183,0		(152,0-180,0)		
**	(144,0-152,0)				(176,0-186,0)				
				LDA	0 bar				
				500	91,0-95,0				
					(88,0-98,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

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1.86

C4

C4

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 g

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
US-PES6P..RS3083 +US-RSV..P2/488-1	0		10,4-10,5
		0,66	12,9-13,0
		0,40	11,2-11,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

**** Setting without torque-control spring retainer at 1 mm control-rod travel less. Raising of full-load delivery with torque-control spring retainer to 11.5 mm control-rod travel.**

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 d

1. Edition

En

PES 6 P 110 A 720 RS 3157

RQV 350-1300 PA 788

Komb.-Nr. 9 400 087 353

supersedes

company: Ford (FT0)

engine: 6,6 L-TC
170 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,25-4,35$ mm (from BDC) RW = 9,0-12,0 mm
 $(4,20-4,40)$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	13,0+0,1	12,5-12,7	0,5 (0,9)			
350	7,9-8,1	1,9-2,3	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 15	100	min. 9,5	350	0,6-1,3
ca. 64	12,0	1360-1370					350	7,9-8,1	500	2,3-2,7
	4,0	1490-1520					620-680=2,0		800	4,0-4,3
	1620	0 - 1,0				370-440			1000	5,0-5,3
						③a			1300	7,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1300	0,9 bar 125,0-127,0 (123,0-129,0)	1360-1370*	LDA 600	0,9 bar 83,0-87,0 (81,0-89,0)	100	100,0-120,0 (96,0-124,0)	-	-
			LDA 500	0 bar 60,0-62,0 (57,0-65,0)	350	19,0-23,0 (16,5-25,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

FOR 6,6 d - 2 -

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P.. RS3157 + RQV..PA 788	0,90	0 0,65 0,53	13,0-13,1 11,4-11,5 12,4-12,6 11,8-11,9

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 e

1. Edition

En

PES 6 P 110 A 720 RS 3158

RQV 350-1300 PA 787

Komb.-Nr. 9 400 087 354

supersedes -

company: Ford (FT0)

engine: 170 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{4,25-4,35}
(4,20-4,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1300	11,6+0,1	11,3-11,5	0,5 (0,9)			
350	7,7-7,9	2,0-2,4	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 15	100	min. 9,5	350	0,6-1,3
ca. 62	10,6	1360-1370					350	7,7-7,9	500	2,3-2,7
	4,0	1470-1500					690-750	= 2,0	800	4,0-4,3
	1600	0 - 1,0				370-440			1000	5,0-5,3
						③a			1300	7,3

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	112,5-114,5 (110,5-116,5)	1360-1370*	500	73,0-77,0 (71,0-79,0)	100	100,0-120,0 (96,0-124,0)	1300	11,6+0,1
			900	101,0-106,0 (99,0-108,0)	350	= 20,0-21,0 mm RW 20,0-24,0 (17,5-26,5)	500	12,1+0,1
							900	12,0+0,2
							1050	11,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,0 d 1

2. Edition

En

PE 6 P 110 A 320 LS 3805-10
Komb.-Nr. 0 401 876 739

RSV 650-1150 P 1 A 820-3

supersedes 4.85
Daimler-Benz
company
engine OM 421
159 kW

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ (3,95-4,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	12,1+0,1	13,0 - 13,2	0,4 (0,8)			
650	6,0-6,2	1,6 - 2,2	0,4 (0,7)			
975	-	C, Sp. 4 u. 5	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 30	650	6,1	1180	12,0 - 12,1
	x = 4,0						100	min. 19,5	975	12,5 - 12,7
ca. 57	11,1	1210-1220					650	6,0 - 6,2		
2a	4,0	1240-1260					650 - 715	= 2,0		
	1350	0,3 - 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1180	130,0 - 132,0 (127,5 - 134,5)	1160-1170 *	975	130,0 - 134,0 (127,0 - 137,0)	100	140,0-160,0 (136,0-164,0)	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,0 r 1

1. Edition

En

PE 6 P 110 A 320 LS 3814-10
Komb.-Nr. 0 401 846 806

RQ 300/950 PA 187-12

supersedes

company: Daimler-Benz

engine: OM 421

146 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$
(3,95-4,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	12,5+0,1	12,2-12,4	0,4(0,8)			
300	8,3-8,5	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	11,5 4,0 1200	995-1010 1045-1075 0-1,5	300	8,4	100 300 430-470	min. 9,9 8,3-8,5 = 2,0	-	-

Torque-control travel
on flyweight assembly dimension a = - mmSpeed regulation: At 995-1010 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
950	122,0-124,0 (119,5-126,5)	600	600	114,0-118,0 (111,0-121,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

C10

C10

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12.85

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 120 A 320 LS 3815-10 RQ 300/1150 PA 511-4
1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: Daimler-Benz
engine: OM 421 A
184 kW
Komb.-Nr. 0 401 846 812

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ (3,95-4,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,4+0,1	15,8-16,0	0,5(0,9)			
300	5,0-5,2	1,4-2,0	0,8(1,2)			
600	-	C, Sp. 4 u. 5	0,8(1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in .

Testo-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
600	19,1-20,8	600	20,0	9,4 4,0 1360	1195-1210 1250-1280 0-1,5	300	5,1	100 300 360-390 = 2,0	min.6,7 5,0-5,2	-	-
VH =	max. 46°										

Torque-control travel
on flyweight assembly dimension a = - mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		Control rod travel mm 7
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	-		LDA 600	0,7 bar 157,0-163,0 (154,0-166,0)	100	140,0-160,0 (136,0-164,0)
				LDA 500	0 bar 139,0-142,0 (136,0-145,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MB 11,0 q 5

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..LS 3815-10 + RQ..PA 511-4	0,70	0 0,34	10,4-10,5 10,1-10,3 10,3-10,4

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ②

and Governors

WPP 001/4 MAN 17,4 c

2. Edition

En

PE 10 P 120 A 520/4 LS 3833 RQ 750 PA 663-7

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

MAN-Nr. 2-7666

Komb.-NR. 0 401 849 721

supersedes 9.85

company: MAN

engine: D 2540 LE
352 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,2-4,3$ mm (from BDC) Cyl.10; RW = 9,0 - 12,0 mm
(4,15-4,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,0+0,1	22,9 - 23,1	0,5 (0,9)			
300	6,1-6,3	1,4 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications Control rod travel mm 5		Control rod travel mm 8		Test specifications Control rod travel mm 10		Control rod travel mm 12	
-	-	-	-	12,3 4,0 950	750-755 790-803 0 -1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a = - mmSpeed regulation: At 750 - 755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	
700	229,0 - 231,0 (226,0 - 234,0)	-	-	-	-	-	-

Checking values in brackets

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/SCA 9,0 c

2. Edition

En

PE 6 P 120 A 320 RS 7103

RQV 200-1100 PA 712

Komb.-Nr. 0 402 746 801

supersedes 5.85

company: Saab-Scania

engine: DSC 901

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{4,5-4,6}
 (4,45-4,65) mm (from BDC) RW 6,0 - 8,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	17,8 - 18,0	0,7(1,0)			3,3 ± 0,1
225	4,6-4,8	1,5 - 1,9	0,3(0,6)			(3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 8	100	min.6,1	225	0,8-0,9
ca.63	11,5	1140-1150					225	4,6-4,8	350	2,2-3,1
	4,0	1290-1320					290-350=2,0		420	3,6-4,5
	1450	0 - 1,0							550	4,9-5,1
									1140	8,6-8,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 178,0-180,0 (175,0-183,0)	1140-1150 *	LDA 1100	0,9 bar 177,0-185,0 (175,0-187,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 138,0-142,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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D. Adjustment Test for Manifold Pressure Compensator

SCA 9,0 c

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P .. RS 7103 + RQV .. PA 712	0,90	0 0,435 0,335	12,5 - 12,6 10,2 - 10,5 11,9 - 12,0 10,6 - 10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 4.10.1984
- Start of fuel delivery-engine: 15° v. OT
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 GWS 18,0 d

1. Edition

En

PE 6 P 130 A 720 RS 7112 RQV 350/900 PA 760

Komb.-Nr. 0 402 046 826

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company: Guascor

F 180 T, TA

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 4,4 - 4,5 \\ (4,35-4,55) \end{matrix}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	13,3+0,1	29,9-30,2	0,6 (1,0)			
350	5,2-5,4	2,4-3,0	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	940	15,2-17,8	-	-	-	ca. 12	100	min. 6,8	300	0,9-1,2
ca. 62	12,3	940-950					350	5,2-5,4	700	4,7-5,2
	4,0	1005-1035							900	7,7
	1150	0 - 1,0				355-455				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
900	299,0-302,0 (295,5-305,5)	940-950 *	-	-	-	-	-	-
					350	24,0-30,0 (20,0-34,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

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Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 59,2 a 1

1. Edition

En.

PE 6 ZW 120/400 RS 27/2

PE 6 ZW 120/410/3 RS 28/2

RQUV 300-750 ZW 31

Replaces -

Firm: MTU

Engine: MMB 820

1 - 5 - 3 - 6 - 2 - 4 je $60^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

VDT-W-400/305 and instructions P. 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Testoil-ISO 4113

Port closing at prestroke 2,0-2,1 mm (from BDC) Cyl. 1

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	336,0-342,0	10,0(15,0)	333,0-345,0	
600 250	6,0 6,0	79,0- 99,0 40,0- 56,0	11,0(16,0) 10,0(15,0)	75,0-103,0 36,0- 60,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Control lever deflection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	min ⁻¹ 10	Control-rod travel mm 11
ca. 85	750 775 800 840 865	21,5-23,5 13,0-18,0 5,0-12,0 0- 3,0 0	-	-	-	ca. 19	270 300 325 350 400 540	11,0-13,0 7,6- 8,0 5,0- 6,2 4,8 3,3-4,3 0	-	-

Torque control travel a —

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
-	not known	-	-	-	-	-

Checking values in brackets

2.86

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Pump:

Furthermore, the customer requests that the control-rod projection at control-rod travel 0 mm be stamped into these pumps on the shutoff and max. delivery ends at the pump housing. These dimensions which must be stamped are measured as follows:

Set control-rod travel 18 mm (setting point of pump) with locking device, measure the projection of the control-rod end face at pump end 2, subtract 18 mm from the dimension measured; measure the projection of the control rod with mounted fork-shaped piece at pump end 1, add 18 mm to the dimension measured. Stamp these dimensions measured on the pump housing on the front side above the spring-compartment lid (dimension measured for pump end 1 near plunger-and-barrel assembly 1, and the dimension of pump end 2 near assembly 6). Size of the figures approx. 5 - 6 mm.

After removal of the locking device, with the control rod at shutoff position, the 0 dimension measured at pump end 2 must be obtained or fallen below!

In the case of pumps with a governor, measure and stamp in only the dimension at the drive end.

No plunger-and-barrel assembly must deliver more than 346.0 cm³/1000 strokes or less than 332.0 cm³/1000 strokes.

Governor:

The lower idle spring must be supported from beneath between its spring seats, and if necessary also the center spring under the outer spring seat, so that the governor values are obtained!

En

Test specifications

Fuel injection pumps

and governors

WPP 001/4 MTU 59,2 a 2

1. Edition

En.

PE 6 ZW 120/400 RS 54/2 RQUV 300-750 ZWA 31 L

Replaces -

Firm: MTU

Engine: MMB 820

1 - 5 - 3 - 6-2 - 4 je $60^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

VDT-W-400/305 and instructions P. 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDC) Cyl. 1

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	336,0-342,0	10,0(15,0)	333,0-345,0	
600	6,0	79,0- 99,0	11,0(16,0)	75,0-103,0	
250	6,0	40,0- 56,0	10,0(15,0)	36,0- 60,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Control lever deflection degrees 4	mm min ⁻¹ 5	Control-rod travel mm min ⁻¹ 6	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm min ⁻¹ 9	mm min ⁻¹ 10	Control-rod travel mm min ⁻¹ 11
ca. 85	750	21,5-23,5	-	-	-	ca. 19	270	11,0-13,0	-	-
	775	13,0-18,0					300	7,6- 8,0		
	800	5,0-12,0					325	5,0- 6,2		
	840	0- 3,0					350	4,8		
	865	0					400	3,3- 4,3		
							540	0		

Torque control travel a= mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3		min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
-	not known	-		-	-	-	-

Checking values in brackets

2.86

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Pump:

Furthermore, the customer requests that the control-rod projection at control-rod travel 0 mm be stamped into these pumps on the shutoff and max. delivery ends at the pump housing. These dimensions which must be stamped are measured as follows:

Set control-rod travel 18 mm (setting point of pump) with locking device, measure the projection of the control-rod end face at pump end 2, subtract 18 mm from the dimension measured; measure the projection of the control rod with mounted fork-shaped piece at pump end 1, add 18 mm to the dimension measured. Stamp these dimensions measured on the pump housing on the front side above the spring-compartment lid (dimension measured for pump end 1 near plunger-and-barrel assembly 1, and the dimension of pump end 2 near assembly 6). Size of the figures approx. 5 - 6 mm.

After removal of the locking device, with the control rod at shutoff position, the 0 dimension measured at pump end 2 must be obtained or fallen below!

In the case of pumps with a governor, measure and stamp in only the dimension at the drive end.

No plunger-and-barrel assembly must deliver more than 346.0 cm³/1000 strokes or less than 332.0 cm³/1000 strokes.

Governor:

The lower idle spring must be supported from beneath between its spring seats, and if necessary also the center spring under the outer spring seat, so that the governor values are obtained!

En

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 39,7 c 1

3. Edition

En.

PE 12 ZW 150/120 RS 1029
Komb.-Nr. 0 402 430 012

RQV 300-1200 ZWA 51 R

Replaces 9.85

Firm: MTU

Engine: 12 V 331

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

0-45-60-105-120-165-180-225-240-285-300-345 ° $\pm 0,5$ ° ($\pm 0,75$ °)

Note VDT-W-A11g./7 !

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke ^{2,5-2,6} (2,45-2,65) mm (from BDC) Cyl. 12

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm ³ /1000 strokes 3	Difference in fuel delivery cm ³ /1000 strokes 4	Fuel delivery Checking values cm ³ /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	501,0-511,0	15,0 (22,0)	498,0-514,0	
600	9,0	110,0-130,0	15,0 (22,0)	107,0-133,0	
300	9,0	46,0-72,0	10,0 (15,0)	43,0-75,0	

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min ⁻¹ 2	Control-rod travel mm min ⁻¹ 3	Control lever deflection degrees 4	mm min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	mm min ⁻¹ 8	Control-rod travel mm 9	mm min ⁻¹ 10	Control-rod travel mm 11
ca. 84	1200	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
ca. 84	1200 17,0 4,0 1400	18,0-19,0 1205-1225 1320-1380 0 - 2,0	(max. 30)	200 300 500 590-720 = 0	14,3-17,2 10,3-11,8 2,5-3,7		200 400 485-590 = 0	10,8-14,2 3,9-5,0		

Torque control travel a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm ³ /1000 strokes 2	min ⁻¹ 3	Idle stop	min ⁻¹ 4	cm ³ /1000 strokes 5	min ⁻¹ 6	cm ³ /1000 strokes 7
-	not known	300	RW = 8,0 mm	-	-		

Checking values in brackets

12.85

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Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 2, 4c 2

4. Edition

En

Testoil-ISO 4113

VA 3/100 H 1100 CR 9-3
CR 9-4

DHK 1688 901 020

Pre-stroke setting 0,3 mm \pm 0,04

plunger lift of 1,0 mm related to outlet "A".

supersedes 3.76

company: IHC

engine: D 155 X 36
D 155-E 453

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers

Test Instructions and Test Equipment
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press. kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	700	3, 2-4, 0 mm		
1.2 Supply pump pressure	700	4, 3-4, 8 kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	63, 0-64, 0 cm ³ /1000 strokes		2, 5
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	300	17, 0-23, 0 cm ³ /1000 strokes		3, 0
1.5 Start 196 bar	100	min .90, 0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1150	31, 0-39, 0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	400 0, 9-1, 9 (0, 6-2, 2)	700 (2, 9-4, 3)	900-1050 4, 7-5, 4 (4, 4-5, 7)
2.2 Supply pump	rev/min kp/cm ²	200 1, 8-2, 3 (1, 6-2, 5)	700 (4, 1-5, 0)	1100 5, 8-6, 3 (5, 6-6, 5)
Overflow delivery	rev/min cm ³ /10 s	500 55-100 (40-110)		1100 55-100 (40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1200-1250	0	
		1150	(30, 0-40, 0)	
		1080	65, 5-68, 5 (64, 5-69, 5)	
		800	(62, 5-64, 5)	
		500	55, 0-58, 0 (54, 0-59, 0)	
	Stop	1100	0	
Idle stop	Full	430-500	0	
		300	(16, 0-24, 0)	
		100	min .90, 0	
end stop		220-300	min.95, 0	

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4.86

C22

C22

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p>$\alpha = 25 \pm 4^\circ$</p> <p>$\beta = 45 \pm 8^\circ$</p> <p>$\gamma = 30 - 8^\circ$</p> <p>$\delta = 60 + 8^\circ$</p>	<p>Pump</p> <p>Dimension \underline{IX} 6,5 mm</p> <p>Dimension \underline{V} 25,0 mm</p>

①

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 KHD 16,0 c 1

2. Edition

En

PE 12 AM 80 C 610 RS 2005

RQV 200-1150 AB 479 DL

supersedes 4.85

company: KHD

engine: F 12 L 714 A

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12
0 -15 -60 -75 -120-135-180 -195 -240-255-300-315⁰±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Bench⁵ and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	7,4 - 7,8	0,4			
1000	9,0	3,9 - 4,7				
1000	15,0	10,3 - 11,4				
200	9,0	2,8 - 3,6				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1150 1180 1240 1300 1370	15,0-18,0 11,8-15,5 5,5-10,6 0-6,0 0	-	-	-	ca. 10	100 200 300 500 730	7,0-7,6 4,3-6,6 2,6-3,4 1,2-2,6 0	1150	8,3
						③a				

Torque control travel a = 1,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1130	71,5-73,5 (70,5-74,5)	1160-1180 *	600 800	74,0-77,0 (72,5-78,5) 75,5-78,5 (74,0-80,0)	100	min. 99,0	1150 1000 800 600 400	0 0,3-0,5 0,7-0,9 1,2-1,4 1,4-1,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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Testoil-ISO 4113

C24

C24

Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 BMW 2,4b

2. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 R 118

0 460 406 025

DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

supersedes 7.84

company: BMW-USA Ford

engine: M 21 D 24

Overflow temperature 45° C

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	6,5-6,9 mm	1,050	
1.2 Supply pump pressure	1500	5,9-6,5 bar (kgf/cm ²)	1,050	
1.3 Full-load delivery without charge-air pressure	1500	40,5-41,5 cm ³ /1000 strokes	1,050	max. 3,0
Full-load delivery with charge-air pressure	500**	22,0-23,0 cm ³ /1000 strokes	0	max. 3,0
1.4 Idle speed regulation	400**	6,0-10,0 cm ³ /1000 strokes	0	
1.5 Start	2600	17,0-23,0 cm ³ /1000 strokes	1,050	max. 5,0
1.6 Full-load speed regulation	250**	35,0-37,0 cm ³ /1000 strokes	0	
1.7 Load-dependent start of delivery	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 3,8-4,6(3,5-4,9)	1500 (6,0-7,4)	1500** 0	2000 8,2-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 4,4-5,0		2300 7,2-7,8	
Overflow delivery	n = rev/min cm ³ /10 s	500 42-83(27-98)		2400 55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750* 500**	7,0-13,0 (6,0-14,0) (16,0-24,0) 40,5-42,5 (39,2-43,8) (38,7-43,3) 31,5-32,5 (29,0-35,0) (19,5-25,5)	1,050 1,050 1,050 1,050 0,5 0
switch-off			
Idle stop	400**	(4,0-12,0)	
Exhaust gas recirculation driver	450**	max. 3,0	
Start Inspection point	850*** 100**	16,0-18,0(15,0-19,0) 27,0-37,0(20,0-42,0)	
Limit stop	400** 480**	28,0-38,0(25,0-41,0) 19,2-23,8(16,5-26,5)	
2.4 Solenoid	cut-in voltage test voltage	min. 10 V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	3,0
A	
B	

Observations

- * LDA-stroke 7,5 mm
- ** Supply 12 volts to the solenoid valve
- *** Adjustment point for AGR back

- 2 -

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.

(Do not apply voltage to solenoid-operated valve.)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCL 9,5 a

2. Edition
En

PE 8 A 85 ^C_D 410 RS2281 EP/RSV 250-1100 A1 B524DL (1)
EP/RSV 250-1025 A1 B778DL (2)

supersedes 5.77

company: Schlüter

engine: SDM 110 W8 (1)
SDMT 110 W8 (2)

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,5-2,6
(2,45-2,65)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery "D" cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,1 - 5,5	0,4	9	4,2 - 4,5	
	6	1,3 - 2,1		6	0,7 - 1,4	
	15	12,1 - 13,2	-	-	- - -	
200	6	0,1 - 0,9		9	1,4 - 2,2	

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

524DL

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1100	12,0	without auxiliary spring			ca. 20	250	5,5	1080	0
	1130	8,0					150	19 - 21	600	0,6-0,8
	1150	5,0					250	5,2-5,8	350	0,9-1,1
⑤	1120	8,0-10,6	with auxiliary spring				350	3,1-4,1		
	1150	3,5-6,0					540	0-1		
	1250	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational- speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9
1	2							
1100	68,5 - 70,5	1120			100	ca. 20mmRW	250	5,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

Testoil-ISO 4113

778DL

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 51	1025	12,0	without auxiliary spring			ca. 20	250	5,5	1000	0
	1050	8,4					100	19 - 21		
	1080	3,6					250	5,2-5,8		
	1040	9,0-10,4	with auxiliary spring				350	2,8-4,0	400	0,9-1,1
	1100	2,2-3,7					520	0 - 1		
⑤	1200	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3		4	5	6	7	8	9
1025	78,5 - 80,5	1065-1075 *		700	83,5 - 86,5	100	ca. 20mmRW	250	5,5
				500	75,0 - 78,0				
				⑥a					

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1

RSF 360/2300 M 59

0 400 074 954

1 - 3 - 4 - 2

0 -90 -180-270

supersedes...

company Daimler Benz

engine OM 601

53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10
(1,95-2,15)

mm (from BDC)

20-22

Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in .

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 9,5	225	50	⑦ 10,3-10,5	2200		⑫ 100	min. 20,1
	② 5,4-5,6	335		⑧ 7,8-8,2	2500		⑬ 1800	10,8-11,0
	③ 4,2-4,4	400**		⑨ -			⑭ 1000	11,1-11,2
	④ -			⑩ 0-1,0	2950			
	⑤ 1,5	590-690		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑬		Full-load speed regulation ⑬a	Variations in fuel delivery ⑬		Starting fuel delivery Idle		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 ⑬a
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See ⑮ (3,0) Point 8 a ⑮

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

1. **** Checking of idle-auxiliary spring; setting at**
n = 400 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.

Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop.

At n = 335 min⁻¹ and p_u = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

- Control lever up against idle stop

At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1
RSF 360/2300 M 59-1
0 400 074 952
1- 3- 4- 2
0-90-180-270

supersedes

company Daimler Benz

engine: OM 601

53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10
(1,95-2,15)

mm (from BDC)

20-22

Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 9,5	225	50	⑦ 10,3-10,5	2200		⑫ 100	min. 20,1
	② 5,4-5,6	335		⑧ 7,8-8,2	2500		⑬ 1800	10,8-11,0
	③ 4,2-4,4	400**		⑨ -			⑭ 1000	11,1-11,2
	④ -			⑩ 0-1,0	2950			
	⑤ 1,5	590-690		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑬		Full-load speed regulation ⑬a	Variations in fuel delivery ⑬		Starting fuel delivery idle ⑬		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 ⑬a
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See ⑮ (3,0) Point 8 a ⑮

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

BOSCH

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1. ** Checking of idle-auxiliary spring; setting at $n = 400$ 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49° , after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5° , after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop.

At $n = 335 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

- Control lever up against idle stop

At $n = 360$ 1/min, $I = 1.8 \text{ A}$, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At $n = 2950$ 1/min, $I = 3 \text{ A}$ (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At $n = 100$ 1/min, $I = 1.8 \text{ A}$, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 f1

2. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-1
RSF 360/2300 M 60
0 400 074 950
1- 3- 4- 2
0-90-180-270

supersedes 3.85
company Daimler-Benz
engine OM 601
54 kW
USA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10
(1,95-2,15)

mm (from BDC)

20-22

Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	12,1+0,1	3,4-3,5	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
8-12	① min. 9,5	225	50	⑦ 11,3-11,5	2200		⑫ 100	min. 20,1
	② 5,4-5,6	335		⑧ 6,9-7,3	2500		⑬ 1800	11,7-11,9
	③ 4,2-4,4	400**		⑨ -			⑭ 1000	12,1-12,2
	④ -			⑩ 0-1,0	2950			
	⑤ 1,5	590-690		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑬		Full-load speed regulation ⑬a	Variations in fuel delivery ⑬		Starting fuel delivery idle		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	36,0-38,0 (35,0-39,0)	2500*	1800	36,0-37,5 (35,0-38,5)	100	min. 55	6,0 ⑬a
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5)
			1000	34,0-35,0 (33,0-36,0)	2500	14,0-19,0 (13,0-20,0)	2,5 See ⑮ (3,0) Point 8 a ⑮

Checking values in brackets

*ca. 3,2 mm less control rod travel than in Column 2

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1. **** Checking of idle-auxiliary spring; setting at**
 $n = 400 \text{ 1/min}$ control-rod travel (4,1-4,5 mm).
2. **Setting the idle control-lever position:**
 At 1000 1/min, control-rod travel 0,9-1,0 mm.
3. **Checking the idle-auxiliary spring cutoff**
 Control-lever position 49° , after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
 Control-lever position 48.5° , after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.
4. **Checking the pneumatic shutoff box**
 Control lever up against idle stop.
 At $n = 335 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ control rod must move briskly to control-rod travel = 0 mm.
5. Overflow valve 1 469 990 351.
6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
7. **FBG setting**
 FBG setting and locking according to start of delivery average of all cylinders, $19,5 \pm 0.2$ (0.3) degrees camshaft according to cyl. 1.
8. **Checking the ELR servo magnet**
 - Control lever up against idle stop
 At $n = 360 \text{ 1/min}$, $I = 1.8 \text{ A}$, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.
 - Note:
 If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.
 - Control lever up against full-load stop
 At $n = 2950 \text{ 1/min}$, $I = 3 \text{ A}$ (briefly), control-rod travel = 0-1.0 mm
 - Checking of starting:
 At $n = 100 \text{ 1/min}$, $I = 1.8 \text{ A}$, delivery min. 55.0 ccm/1000 strokes.
9. **Checking the governor with ADA pressure unit**

Speed in^{-1}	Pressure (absolute) mbar	Control-rod travel deduction from max. full-load control-rod travel (mm)
1000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7
10. Pin projection = $16.65 \pm 0.05 \text{ mm}$

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 p

1. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-3
RSF 360/2300 M 59-6
0 400 074 930

1- 3- 4- 2
0- 90-180-270

supersedes...

company Daimler Benz
engine OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Note: Before starting testing, observe the important instructions on the reverse.

Port closing at prestroke 2,00-2,10 mm (from BDC) 20-22 Control rod travel
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 9,5	225	50	⑦ 10,3-10,5	2200		⑫ 100	min. 20,1
	② 5,4-5,6	335		⑧ 7,8-8,2	2500		⑬ 1800	10,8-11,0
	③ 4,2-4,4	400**		⑨ -			⑭ 1000	11,1-11,2
	④ -			⑩ 0-1,0	2950			
	⑤ 1,5	590-690		⑪			⑥	Switching point

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑬		Full-load speed regulation ⑧a	Variations in fuel delivery ⑮		Starting fuel delivery Idle		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55 5,0-6,0 (4,5-9,0)	6,0 1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	335		
					2500	22,0-26,0 (21,0-27,0)	2,5 See ⑮ (3,0) Point 8 a ⑯

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

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1. **** Checking of idle-auxiliary spring; setting at $n = 400$ 1/min control-rod travel (4.1-4.5 mm).**

2. **Setting the idle control-lever position:**

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. **Checking the idle-auxiliary spring cutoff**

Control-lever position 49° , after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5° , after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. **Checking the pneumatic shutoff box**

Control lever up against idle stop.

At $n = 335 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ control rod must move briskly to control-rod travel = 0 mm.

5. **Overflow valve 1 469 990 351.**

6. **Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.**

7. **FBG setting**

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. **Checking the ELR servo magnet**

- Control lever up against idle stop

At $n = 360$ 1/min, $I = 1.8 \text{ A}$, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At $n = 2950$ 1/min, $I = 3 \text{ A}$ (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At $n = 100$ 1/min, $I = 1.8 \text{ A}$, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 152-3
RSF 360/2300 M 59-7
0 400 074 932
1 - 3- 4- 2
0 -90- 180-270

supersedes _

company Daimler Benz

engine OM 601
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 mm (from BDC) 20-22 Control rod travel
(1,95-2,15)

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 9,5	225	50	⑦ 10,3-10,5	2200		⑫ 100	min. 20,1
	② 5,4-5,6	335		⑧ 7,8-8,2	2500		⑬ 1800	10,8-11,0
	③ 4,2-4,4	400**		⑨ -			⑭ 1000	11,1-11,2
	④ -			⑩ 0-1,0	2950			
	⑤ 1,5	590-690		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑰		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰		Starting fuel delivery idle		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55	6,0 ⑫a
					335	5,0-6,0 (4,5-9,0)	1,0 (1,5) ⑮
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See (3,0) Point 8 a ⑮

Checking values in brackets

*ca. 2,6 less control rod travel than in Column 2

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1. **** Checking of idle-auxiliary spring; setting at**
n = 400 1/min control-rod travel (4.1-4.5 mm).

2. **Setting the idle control-lever position:**

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. **Checking the idle-auxiliary spring cutoff**

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. **Checking the pneumatic shutoff box**

Control lever up against idle stop.

At n = 335 min⁻¹ and p_v = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. **FBG setting**

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. **Checking the ELR servo magnet**

- Control lever up against idle stop

At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,5 a1

1. Edition

En

Testoil-ISO 4113

PES 5M 55c 320 RS 153
RSF 350/2300 M 55-6
0 400 075 978

1 - 2 - 4 - 5 - 3 je 72°

supersedes

company: Daimler-Benz

engine: OM 602
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Note: Before starting testing, observe the important instructions on the reverse.

Port closing at prestroke 2,0-2,10
(1,95-2,15) mm (from BDC) 20-22

Control rod travel

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25(0,3)			
350	5,4-5,6		0,1 (0,15)			
1800	10,9+0,2		0,25(0,3)			
2200	10,6+0,2		0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 10,0 ② 5,4-5,6 ③ 4,2-4,4 ④ - ⑤ 1,5	220 350 400 ** 640-740	50	⑦ 11,3+0,1 ⑧ 7,8-8,2 ⑨ - ⑩ 0-1,0 ⑪	1000 2500 2950		⑫ 100 ⑬ 1800 ⑭ 2200 ⑥ Switching point	min. 20,1 10,9-11,1 10,6-10,8

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑰		Full-load speed regulation ⑱a	Variations in fuel delivery ⑰		Starting fuel delivery		Difference
Test oil temp. 40°C (104°F)					Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,5-35,5 (32,5-36,5)	2500 * 7,8-8,2 mm RW	1800 1000	34,0-35,0 (33,0-36,5) 31,5-32,5 (30,5-33,5)	100 350 2500	min. 55,0 5,0-6,0 (4,5-9,0) 22,0-26,0 (21,0-27,0)	6,0 ⑫a 1,0 (1,5) ⑮ 2,5 (3,0) ⑯

Checking values in brackets

*ca. 2,3 less control rod travel than in Column 2

1. **** Checking of idle-auxiliary spring; setting at**
n = 400 1/min control-rod travel (4,1-4,6 mm).
2. **Setting the idle control-lever position:**
At 1000 1/min, control-rod travel 0.9-1.0 mm.
3. **Checking the idle-auxiliary spring cutoff**
Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.
4. **Checking the pneumatic shutoff box**
Control lever up against idle stop.
At n = 350 min⁻¹ and p_u = 450 mbar control rod must move briskly to control-rod travel = 0 mm.
5. Overflow valve 1 469 990 351.
6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
7. **Setting the idle control-rod travel at PLA box**
Loosen correction nut when doing this.
8. **Checking the pneumatic idle increase (PLA)**
At 0.4 bar vacuum n = 400 1/min, control-rod travel = (4,0-5,6 mm)
delivery = (5,0 - 13,0 ccm/1000 strokes).
9. **Leak test (vacuum test) on PLA box**
Apply 0.8 bar vacuum to PLA box. Permissible pressure drop 30 mbar in 15 sec.
10. **FBG setting**
FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,5 e

1. Edition

En

Testoil-ISO 4113

PES 5 M 55 C 320 RS 153
RSF 340/2300 M 59-4
0 400 075 982
1- 2- 4 - 5 - 3
0-72-144-216-288

supersedes

company Daimler-Benz

engine OM 602
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10
(1,95-2,15)

mm (from BDC)

20-22

Control rod travel

Note: Before starting
testing, observe the
important instruc-
tions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25 (0,3)			
315	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
13-17	① min. 8,0	220	50	⑦ 11,3+0,1	1000		⑫ 100	min. 20,1
	② 5,4-5,6	315		⑧ 7,8-8,2	2500		⑬ 1800	10,9-11,1
	③ 4,2-4,4	380**		⑨ -			⑭ 2200	10,6-10,8
	④ -			⑩ 0-1,0	2950			
	⑤ 1,5	630-730		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑮		Full-load speed regulation ⑧a	Variations in fuel delivery ⑮		Starting fuel delivery Idle		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0 ⑫a
					315	5,0-6,0 (4,5-9,0)	1,0 (1,5) ⑮
			1000	31,5-32,5 (30,5-33,5)	2500	22,0-26,0 (21,0-27,0)	2,5 (3,0) ⑮

Checking values in brackets

*ca. 2,8 less control rod travel than in Column 2

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1. **** Checking of idle-auxiliary spring; setting at**
n = 380 1/min control-rod travel (4.1-4.5 mm).
2. Setting the idle control-lever position:
At 1000 1/min, control-rod travel 0.9-1.0 mm.
3. Checking the idle-auxiliary spring cutoff
Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.
4. Checking the pneumatic shutoff box
Control lever up against idle stop.
At n = 315 min⁻¹ and p_u = 450 mbar control rod must move briskly to control-rod travel = 0 mm.
5. Overflow valve 1 469 990 351.
6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
7. FBG setting
FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.
8. Checking the ELR servo magnet
 - Control lever up against idle stop
At n = 340 1/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (33,0-41,0) ccm/1000 strokes.
 - Note:
If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.
 - Control lever up against full-load stop
At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm
 - Checking of starting:
At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,5 d

En

1. Edition

Testoil-ISO 4113

PES 5 M 55 C 320 RS 153
RSF 340/2300 M 59-8
0 400 075 979
1- 2- 4 - 5 - 3
0-72-144-216-288

supersedes -
company: Daimler-Benz
engine: OM 602
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 mm (from BDC)
(1,95-2,15)

20-22

Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25 (0,3)			
315	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
13-17	min. 8,0	220	50	11,3+0,1	1000		100	min. 20,1
(1)	5,4-5,6	315	(7)	7,8-8,2	2500		1800	10,9-11,1
(2)	4,2-4,4	380**	(8)	-			2200	10,6-10,8
(3)	-		(9)	0-1,0	2950			
(4)	1,5	630-730	(10)					
(5)			(11)					
							(12)	
							(13)	
							(14)	
							(6)	Switching point

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19)		Full-load speed regulation (8a)		Variations in fuel delivery (17)		Starting fuel delivery idle		Difference
Test oil temp. 40°C (104°F)								
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0	(12a)
			1000	31,5-32,5 (30,5-33,5)	315	5,0-6,0 (4,5-9,0)	1,0 (1,5)	(15)
					2500	22,0-26,0 (21,0-27,0)	2,5 (3,0)	(16)

Checking values in brackets

*ca. 2,8 less control rod travel than in Column 2

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1. ** Checking of idle-auxiliary spring; setting at $n = 380$ 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49° , after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5° , after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop.
At $n = 315$ min⁻¹ and $p_u = 450$ mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

- Control lever up against idle stop

At $n = 340$ 1/min, $I = 1.8$ A, control-rod travel = (12,6-14,0) mm, fuel delivery (33,0-41,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At $n = 2950$ 1/min, $I = 3$ A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At $n = 100$ 1/min, $I = 1.8$ A, delivery min. 55.0 ccm/1000 strokes.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 154
RSF 375/2300 M 61
0 400 074 948
1- 3- 4 - 2
0-90-180-270

supersedes-

company **Daimler-Benz**
engine **OM 601**
53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **2,00-2,10** mm (from BDC) **20-22** Control rod travel
(1,95-2,15)

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25 (0,3)			
375	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 11,5	250	50	⑦ 11,1+0,1	1000		⑫ 100	min. 20,1
	② 5,4-5,6	375		⑧ 7,8-8,2	2500		⑬ 1800	10,8-11,0
	③ 4,4-4,6	400**		⑨ -			⑭ 2200	10,3-10,5
	④ -			⑩ 0-1,0	2950			
	⑤ 1,5	630-730		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑬		Full-load speed regulation ⑬a	Variations in fuel delivery ⑬		Starting fuel delivery idle		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0 ⑬a
			1000	31,0-32,0 (30,0-33,0)	375	5,0-6,0 (4,5-9,0)	1,0 (1,5) ⑬
					2500	22,0-26,0 (21,0-27,0)	2,5 (3,0) ⑬

Checking values in brackets

*ca. 2,4 less control rod travel than in Column 2

1. **** Checking of idle-auxiliary spring; setting at**
n = 375 1/min control-rod travel (4.3-4.7 mm).
2. **Setting the idle control-lever position:**
At 1000 1/min, control-rod travel 0.9-1.0 mm.
3. **Checking the idle-auxiliary spring cutoff**
Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.
4. **Checking the pneumatic shutoff box**
Control lever up against idle stop.
At n = 375 min⁻¹ and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.
5. Overflow valve 1 469 990 351.
6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
7. **FBG setting**
FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.
8. **Setting the idle control-rod travel at PLA box**
Loosen correction nut when doing this.
9. **Checking the pneumatic idle increase (PLA)**
At 0.4 bar vacuum n = 425 1/min, control-rod travel = (7.0-8.7 mm)
delivery = (13.0-21.0 ccm/1000 strokes).
10. **Leak test (vacuum test) on PLA box**
Apply 0.8 bar vacuum to PLA box. Permissible pressure drop 30 mbar in 15 sec.
11. **Checking the intermediate control curve (control-lever position)**
Control lever 30°, n = 1000 1/min, control-rod travel = 6.3-7.0 mm
12. **RWG testing and setting with evaluation circuit R2-1.3**
Receiving inspection
Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Operate at speed of 1000 1/min; a voltage of 2.65-2.73 (2.61-2.77) V must be indicated on digital voltmeter.
RWG setting
At 1000 1/min set a delivery of 18.0-19.0 (17.0-20.0) ccm/1000 strokes with control lever. Move RWG until U = 2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 2.65-2.73 V must be obtained.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 55 C 320 RS 154
RSF 360/2300 M 63
0 400 074 942
1- 3- 4 - 2
0-90-180-270

supersedes

company Daimler-Benz

engine OM 601

53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

 2,00-2,10
(1,95-2,15)

mm (from BDC)

20-22

Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25 (0,3)			
335	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17 ①	min. 9,0	225	50 ⑦	11,1+0,1	1000		⑫ 100	min. 20,1
②	5,4-5,6	335	⑧	7,8-8,2	2500		⑬ 1800	10,8-11,0
③	4,2-4,4	400**	⑨	-			⑭ 2200	10,3-10,5
④	-		⑩	0-1,0	2950			
⑤	1,5	590-690	⑪				⑥	Switching point

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		19	Full-load speed regulation	8a	Variations in fuel delivery		17	Starting fuel delivery		
Test oil temp. 40°C (104°F)							18	Idle		
rev/min	cm ³ /1000 strokes		rev/min		rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	Difference
1	2		3		4	5		6	7	cm ³ /1000 strokes
										8
2200	33,0-35,0 (32,0-36,0)		2500*		1800	34,0-35,5 (33,0-36,5)		100	min. 55,0	6,0
								335	5,0-6,0 (4,5-9,0)	1,0 (1,5)
					1000	31,0-32,0 (30,0-33,0)		2500	22,0-26,0 (21,0-27,0)	2,5 (3,0)

Checking values in brackets

*Ca. 2,4 less control rod travel than in Column 2

1. **** Checking of idle-auxiliary spring; setting at**
n = 400 1/min control-rod travel (4.1-4.5 mm).

2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.

Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop.

At n = 335 min⁻¹ and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

5. Overflow valve 1 469 990 351.

6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

8. Checking the ELR servo magnet

- Control lever up against idle stop

At n = 360 1/min, I = 1.8 A, control-rod travel = (12.0-13.4) mm, fuel delivery (30.0-38.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop

At n = 2950 1/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

9. Checking the intermediate control curve (control-lever position)

Control lever 30°, n = 1000 1/min, control-rod travel = 6.3-7.0 mm

12. RWG testing and setting with evaluation circuit R2-1.3

Receiving inspection

Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Operate at speed of 1000 1/min; a voltage of 2.65-2.73 (2.61-2.77) V must be indicated on digital voltmeter.

RWG setting

At 1000 1/min set a delivery of 18.0-19.0 (17.0-20.0) ccm/1000 strokes with control lever. Move RWG until U = 2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 2.65-2.73 V must be obtained.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w 5

En

1. Edition

Testoil-ISO 4113

PES 6 M 55 C 320 RS 156
RSF 315/2300 M 60-4
0 400 076 988
1- 5 - 3 - 6 - 2 - 4
0-60 -120-180-240-300

supersedes

company Daimler-Benz

engine OM 603
80 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 mm (from BDC) 20-22 Control rod travel
(1,95-2,15)

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25 (0,3)			
290	5,4-5,6	0,55-0,65	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in .

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 7,0 ② 5,4-5,6 ③ 4,2-4,4 ④ - ⑤ 1,5	220 290 360** 620-720	50	⑦ 11,3-11,4 ⑧ 7,8-8,2 ⑨ - ⑩ 0-1,0 ⑪	1000 2500 2950		⑫ 100 ⑬ 1800 ⑭ 2200 ⑥ Switching point	min. 20,1 10,9-11,1 10,6-10,8

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp. 40°C (104°F)					Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0
					290	5,5-6,5 (5,0-9,5)	1,0 (1,5)
			1000	31,5-32,5 (30,5-33,5)	2500	22,0-26,0 (21,0-27,0)	2,5 (3,0)

Checking values in brackets

*ca. 2,8 mm less control rod travel than in Column 2

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1. ** Checking of idle-auxiliary spring; setting at $n = 360$ 1/min control-rod travel (4,1-4,5 mm).
2. Setting the idle control-lever position:
At 1000 1/min, control-rod travel 0,9-1,0 mm.
3. Checking the idle-auxiliary spring cutoff
Control-lever position 49° , after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position $46,5^\circ$, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.
4. Checking the pneumatic shutoff box
Control lever up against idle stop.
At $n = 290 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ control rod must move briskly to control-rod travel = 0 mm.
5. Overflow valve 1 469 990 351.
6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
7. FBG setting
FBG setting and locking according to start of delivery average of all cylinders, $19,5 \pm 0.2$ (0.3) degrees camshaft according to cyl. 1.
8. Checking the ELR servo magnet
 - Control lever up against idle stop
At $n = 315$ 1/min, $I = 1.8 \text{ A}$, control-rod travel = (12,6-14,0) mm, fuel delivery (32,0-40,0) ccm/1000 strokes.

Note:
If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

 - Control lever up against full-load stop
At $n = 2950$ 1/min, $I = 3 \text{ A}$ (briefly), control-rod travel = 0-1.0 mm

Checking of starting:
At $n = 100$ 1/min, $I = 1.8 \text{ A}$, delivery min. 55.0 ccm/1000 strokes.

9. Checking the governor with ADA pressure unit

Speed in^{-1}	Pressure (absolute) mbar	Control-rod travel deduction from max. full-load control-rod travel (mm)
1000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7

10. Pin projection = $16.65 \pm 0.05 \text{ mm}$

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w 2

1. Edition

En

Testoil-ISO 4113

PES 6 M 55 C 320 RS 157
RSF 315/2300 M 64
0 400 076 992
1- 5- 3 - 6 - 2 - 4
0-60-120-180-240-300

supersedes

company Daimler-Benz

engine OM 603

110 kW (USA)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30
(2,15-2,35)

mm (from BDC)

20-22

Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,9+0,1	5,1-5,2	0,25 (0,3)			
290	5,3-5,5	0,55-0,65	0,1 (0,15)			
1600			0,25 (0,3)			
2200			0,25 (0,3)			
1000			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
8-12	① min. 7,0	200	50	⑦ 13,9+0,1	1000		⑫ 100	min. 20,1
	② 5,3-5,5	290		⑧ 8,1-8,5	2500		⑬ 1600	13,2-13,4
	③ 4,2-4,4	360**		⑨ -			⑭ 2200	12,3-12,5
	④ -			⑩ 0-1,0	2950		Switching point	
	⑤ 2,5	510-610		⑪				

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰		Starting fuel delivery idle ⑱		Difference	
Test oil temp. 40°C (104°F)								
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2200	48,5-50,5 (47,5-51,5)	2500*	1600	50,0-51,5 (49,0-52,5)	100	min. 55,0	6,0	⑫a
			1000	51,0-52,0 (50,0-53,0)	290	5,5-6,5 (5,0-9,5)	1,0 (1,5)	⑮
					2500	29,0-33,0 (28,0-34,0)	2,5 (3,0)	⑯

Checking values in brackets

*ca. 4,0: less control rod travel than in Column 2

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1. Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar

18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

2. ** Checking of idle-auxiliary spring; setting at
n = 360 1/min control-rod travel (4.1-4.5 mm).

3. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

Control lever up against idle stop.
At n = 290 min⁻¹ and p_u = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

6. Overflow valve 1 469 990 351.

7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

8. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

En

9. Checking the ELR servo magnet

- Control lever up against idle stop
At $n = 315$ 1/min, $I = 1.8$ A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop
At $n = 2950$ 1/min, $I = 3$ A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At $n = 100$ 1/min, $I = 1.8$ A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30° , $n = 1000$ 1/min, control-rod travel = 9.5-10.2 mm

11. RWG testing and setting with evaluation circuit R2-1.3**Receiving inspection**

Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Apply 1850 bar to ALDA. Operate at speed of 1000 1/min; a voltage of 3.23-3.31 (3.19-3.35) V must be indicated on digital voltmeter.

RWG setting

At 1000 1/min set a delivery of 23.0-24.0 (22.0-25.0) ccm/1000 strokes with control lever. Move RWG until $U = 2.095-2.105$ is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 3.23-3.31 V must be obtained.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w 3

1. Edition
En
Testoil-ISO 4113

PES 6 M 55 C 320 RS 157
RSF 315/2300 M 64-2
0 400 076 987

1- 5- 3- 6- 2- 4
0-60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -
company Daimler-Benz
engine OM 603
110 kW

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 mm (from BDC) 20-22
(2,15-2,35)

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,9+0,1	5,1-5,2	0,25(0,3)			
290	5,3-5,5	0,55-0,65	0,1 (0,15)			
1600			0,25(0,3)			
2200			0,25(0,3)			
1000			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
8-12	① min. 7,0 ② 5,3-5,5 ③ 4,2-4,4 ④ - ⑤ 2,5	200 290 360** 510-610	50	⑦ 13,9+0,1 ⑧ 8,1-8,5 ⑨ - ⑩ 0-1,0 ⑪	1000 2500 2950		⑫ 100 ⑬ 1600 ⑭ 2200 ⑥ Switching point	min. 20,1 13,2-13,4 12,3-12,5

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19)		Full-load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery Idle		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	48,5-50,5 (47,5-51,5)	2500*	1600	50,0-51,5 (49,0-52,5)	100	min. 55,0	6,0 (12a)
			1000	51,0-52,0 (50,0-53,0)	290	5,5- 6,5 (5,0- 9,5)	1,0 (15) (1,5)
					2500	29,0-33,0 (28,0-34,0)	2,5 (16) (3,0)

Checking values in brackets

*Ca. 4,0 less control rod travel than in Column 2

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1. Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar

18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

2. ** Checking of idle-auxiliary spring; setting at
n = 360 1/min control-rod travel (4.1-4.5 mm).

3. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

Control lever up against idle stop.
At n = 290 min⁻¹ and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

6. Overflow valve 1 469 990 351.

7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

8. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

En

9. Checking the ELR servo magnet

- Control lever up against idle stop
At $n = 315$ 1/min, $I = 1.8$ A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop
At $n = 2950$ 1/min, $I = 3$ A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At $n = 100$ 1/min, $I = 1.8$ A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30° , $n = 1000$ 1/min, control-rod travel = 9.5-10.2 mm

11. RWG testing and setting with evaluation circuit R2-1.3**Receiving inspection**

Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Apply 1850 bar to ALDA. Operate at speed of 1000 1/min; a voltage of 3.23-3.31 (3.19-3.35) V must be indicated on digital voltmeter.

RWG setting

At 1000 1/min set a delivery of 23.0-24.0 (22.0-25.0) ccm/1000 strokes with control lever. Move RWG until $U = 2.095-2.105$ is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 3.23-3.31 V must be obtained.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 w 4
1. Edition
En

Testoil-ISO 4113

PES 6 M 55 C 320 RS 157-1
RSF 315/2300 M 65
0 400 076 986

1- 5- 3- 6- 2- 4

0-60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -
company Daimler-Benz
engine OM 603
110 kW

A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30
(2,15-2,35)

mm (from BDC)

20-22

Control rod travel

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,9+0,1	5,1 -5,2	0,25 (0,3)			
290	5,3-5,5	0,55-0,65	0,1 (0,15)			
1600			0,25 (0,3)			
2200			0,25 (0,3)			
1000			0,25 (0,3)			

Set uniform delivery according to the values in .

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
8-12	① min.7,0	200	50	⑦ 13,9+0,1	1000		⑫ 100	min.20,1
	② 5,3-5,5	290		⑧ 8,1-8,5	2500		⑬ 1600	13,2-13,4
	③ 4,2-4,4	360**		⑨ -			⑭ 2200	12,3-12,5
	④ -			⑩ 0-1,0	2950			
	⑤ 2,5	510-610		⑪			⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑮		Full-load speed regulation ⑧a		Variations in fuel delivery ⑮		Starting fuel delivery Idle ⑮		Difference	
Test oil temp. 40°C (104°F)									
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes		
1	2	3	4	5	6	7	8		
2200	48,5-50,5 (47,5-51,5)	2500*	1600	50,0-51,5 (49,0-52,5)	100	min. 55,0	6,0	⑫a	
					290	5,5 - 6,5 (5,0 - 9,5)	1,0 (1,5)	⑮	
			1000	51,0-52,0 (50,0-53,0)	2500	29,0 -33,0 (28,0- 34,0)	2,5 (3,0)	⑮	

Checking values in brackets

*ca. 4,0 less control rod travel than in Column 2

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1. Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar

18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

2. ** Checking of idle-auxiliary spring; setting at
n = 360 l/min control-rod travel (4.1-4.5 mm).

3. Setting the idle control-lever position:

At 1000 l/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 l/min max. 0.2 mm control-rod travel deduction permissible.
Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

Control lever up against idle stop.
At n = 290 min⁻¹ and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

6. Overflow valve 1 469 990 351.

7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.

8. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.

En

9. Checking the ELR servo magnet

- Control lever up against idle stop
At $n = 315$ 1/min, $I = 1.8$ A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop
At $n = 2950$ 1/min, $I = 3$ A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At $n = 100$ 1/min, $I = 1.8$ A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30° , $n = 1000$ 1/min, control-rod travel = 9.5-10.2 mm

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,5 b

1. Edition

En

Testoil-ISO 4113

PES 5 M/55 C 320 RS 159
RSF 340/2300 M 60-3
0 400 075 976

supersedes-

company Daimler-Benz

engine: UM 602-LVP
66 kW

1- 2- 4- 5- 3

0-72-144-216-288

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 mm (from BDC) 20-22
(1,45-1,65)

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,1-3,2	0,25(0,3)			
315	5,0-5,2	0,5-0,6	0,1 (0,15)			
1800			0,25(0,3)			
2250			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	① min. 7,5	220	50	⑦ 11,3+0,1	1000		⑫ 100	min. 20,1
	② 5,0-5,2	315		⑧ 7,0-7,4	2500		⑬ 1800	10,8-11,0
	③ 3,8-4,0	380**		⑨ -			⑭ 2250	10,4-10,6
	④ -			⑩ 0-1,0	2950			
	⑤ 2,5	530-630		⑪			⑥	Switching point

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑰		Full-load speed regulation ⑱	Variations in fuel delivery ⑲		Starting fuel delivery Idle		Difference cm ³ /1000 strokes
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8
2250	32,0-34,0 (31,0-35,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min. 55,0	6,0 ⑫a
			1000	31,0-32,0 (30,0-33,0)	315	5,0- 6,0 (4,5- 9,0)	1,0 (1,5) ⑮
					2500	16,0-20,0 (15,0-21,0)	2,5 (3,0) ⑯

Checking values in brackets

*ca. 3,5 less control rod travel than in Column 2

1. **** Checking of idle-auxiliary spring; setting at**
 $n = 380 \text{ 1/min}$ control-rod travel (3.7-4.1 mm).
2. **Setting the idle control-lever position:**
 At 1000 1/min, control-rod travel 1.9-2.0 mm.
3. **Checking the idle-auxiliary spring cutoff**
 Control-lever position 49° , after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible.
 Control-lever position 48.5° , after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.
4. **Checking the pneumatic shutoff box**
 Control lever up against idle stop.
 At $n = 335 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar}$ control rod must move briskly to control-rod travel = 0 mm.
5. Overflow valve 1 469 990 351.
6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
7. **FBG setting**
 FBG setting and locking according to start of delivery average of all cylinders, 18.5 ± 0.2 (0.3) degrees camshaft according to cyl. 1.
8. **Checking the ELR servo magnet**
 - Control lever up against idle stop
 At $n = 340 \text{ 1/min}$, $I = 1.8 \text{ A}$, control-rod travel = (12.5-13.9) mm, fuel delivery (33.0-41.0) ccm/1000 strokes.
 - Note:
 If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.
 - Control lever up against full-load stop
 At $n = 2950 \text{ 1/min}$, $I = 3 \text{ A}$ (briefly), control-rod travel = 0-1.0 mm
 - Checking of starting:
 At $n = 100 \text{ 1/min}$, $I = 1.8 \text{ A}$, delivery min. 55.0 ccm/1000 strokes.
9. **Checking the intermediate control curve (control-lever position)**
 Control lever 30° , $n = 1000 \text{ 1/min}$, control-rod travel 7.1-7.8mm
10. **Checking the governor with ADA pressure unit**

Speed in^{-1}	Pressure (absolute) mbar	Control-rod travel deduction from max. full-load control-rod travel (mm)
1000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7
11. Pin projection = $16.65 \pm 0.05 \text{ mm}$

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0x

En

1. Edition

Testoil-ISO 4113

PES 5 MW 55/320 RS 15
RW 375/1450 MW 19-1

0 403 245 024

1-2 - 4 - 5 - 3

0-72-144-216-288 $\pm 0,50$ (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes-

company Daimler-Benz

 engine: W 123/OMG 17
51,5 kW

A. Fuel Injection Pump Settings

Port closing at prestroke $1,70-1,80$ mm (from BDC)
(1,65-1,85)

Control rod travel

without ADA

19,5-22,5 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,1 $\pm 0,1$	3,8-3,9	0,25 (0,3)			
350	6,3-6,5	0,65-0,75	0,1 (0,15)			
1430			0,25 (0,3)			
2080			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

without ADA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
27-31	min. 11 max. 11 6,3-6,5 ** - 2,0	100 250 350 360 - 600-650	69	12,1	1570-1590		20,5-21,5 13,0-13,2 13,1-13,2	100 1430 1000
(1) (2) (3) (4) (5)			(7) (8) (9) (10) (11)		0,0-1,0 2400		(12) (13) (14) (6) Switching point	
							270-320 (250-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ADA

Full-load delivery (19)		Full-load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery idle (18)		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
1430	39,5-42,5 (38,5-43,5)	1570-1590 * (1560-1600)	1000	38,0-39,0 (37,0-40,0)	100 350 2080	min. 57 6,5-7,5 (6,0-10,0) 9,0-15,0 (8,0-16,0)	6,0 1,0 (1,5) 2,5 (3,0)
							(12a) (15) (16)

Checking values in brackets

* 1 mm

less control rod travel than in Column 2

8.84

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1. Test sequence - Change in VDT-W-420/300
Suppl. 2, Ed. 2

Section 4.1 - Adjust the spring retainer (compensation capsule)

New text:

Run the injection pump at $n = 1,000 \text{ min}^{-1}$.
Fix the control lever at 69° .
Using a pin wrench, turn in the spring retainer so far that the control-rod travel is reached at $n = 1,000 \text{ min}^{-1}$. Pin wrench = KDEP 1064/1.
Measure the full-load delivery.

Section 4.3 changes as follows:

Drive the injection pump at $n = 800 \text{ min}^{-1}$.
Set the control lever so that the control-rod travel reaches 1,0 - 1,3 mm. The control lever must lie within the permissible tolerance.
Move the idle stop up against the control lever and lock it there.
Reduce the pump speed to $n = 350 \text{ min}^{-1}$ and release the leaf spring (32) with the lower adjusting screw (28) until the control-rod travel specified in the Test-Specifications Sheet is reached.
Carry on according to the Testing Instructions, taking into account that Section 4.8 no longer applies.

2. Testing of Sections A, B and C is carried out without altitude pressure compensator (ADA) aneroid box.
After this test has been completed, the aneroid box is refitted.

Testing the governor with the ADA aneroid box.

Pump speed	Pressure (abs. in mbar)	Reduction from the maximum full-load control-rod travel (mm)
1,000	840	0,9 - 1,1 (0,85 - 1,15)
1,000	913	0,1 - 0,5 (0,05 - 0,55)
1,000	666	2,2 - 3,0 (2,15 - 3,05)

3. Pin projection dimension = $16.65 \pm 0.05 \text{ mm}$
4. ** At this pump speed, apply pressure to the control lever and increase the control-rod travel by $0.4 \pm 0.1 \text{ mm}$.
The idle delivery may not change.

5. Setting angle - Idle/full-load $38 - 42^{\circ}$
6. Sensing-lever setting: Bring sensing lever into contact at $n = 375 \text{ min}^{-1}$ (control lever in full-load position). Control-rod travel must be $0.1 (0.1 - 0.2) \text{ mm}$ more than the full-load control-rod travel at $n = 1,000 \text{ min}^{-1}$.
7. Pneumatic shut-off check:
Move the control lever to the idle position.
Drive the injection pump at $n = 350 \text{ min}^{-1}$.
At $P_{\mu} = 450 \text{ mbar}$ (338 mm Hg) (vacuum), the control rod must move rapidly to control-rod travel = 0 mm position.

En.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 g

8. Edition

En

Testoil-ISO 4113

PES 5 MW 55/320 RS 16
RW 375/2200 MW 22
0 403 245 008

supersedes 1.85

company Daimler-Benz
OM 617A - USA
engine 84,6 kW

(Set idle stage) before starting test. Please note instructions on reverse side.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) 21 mm Control rod travel
(2,05-2,25)

without ALDA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,6+0,1	5,35-5,45	0,25(0,3)			
365	5,3-5,4	0,9-1,0	0,05(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
30	① min.11 ② max.11 ③ 5,3-5,4 ④ ** ⑤ -	100 320 365	67 ± 2	⑦ 11,2 ⑧ 4,0 ⑨ 0-1,0 ⑩ - ⑪ -	2300-2320 2620-2720 2950 -		⑫ 100 ⑬ 1600 ⑭ 1000 2180 Switching point ⑯ 260-310 (240-390)	20,5-21,5 12,7-12,9 13,6-13,7 11,7-11,9

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp. 40°C (104°F)					Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2295-2325)	1600	52,0-53,5 (51,0-54,5) 53,5-54,5 (52,5-55,5)	100	min.55,0	6,0 ⑫a
			1000		365	9,0-10,0 (7,5-11,5)	1,0 ⑬
					375	(5,5-7,5)**	(1,5) ⑭
					2550	24,5-27,5 (23,5-28,5)	2,5 (3,0) ⑮

Checking values in brackets

* 1 mm less control rod travel than in Column 2

Test with ALDA

Point	min ⁻¹	cm ³ /1000 lifts	Control-rod travel	Pressure (absolute)
18	1000	53.5 - 54.5 (52.5 - 55.5)	13.6 - 13.7	1733 mbar (1300 mmHg)
18a	1000***	43.0 - 45.0 (42.0 - 46.0)	-	1067 mbar (800 mmHg)
19	2180	50.0 - 52.0 (49.0 - 53.0)	11.7 - 11.9	1733 mbar (1300 mmHG)
12a	100	min. 55.0	20.5 - 21.5	1733 mbar (1300 mmHG)
15	365	9.0 - 10.0 (7.5 - 11.5)	5.3 - 5.4	987 mbar (740 mmHG)

1. Setting the idle stage: without ALDA

Text replaces Section 4.1 of test instructions

Set control-lever position 30°.

Drive injection pump at $n = 800 \text{ min}^{-1}$.

Screw in spring retainer (torque-control retainer) so that control-rod travel of 1,0 - 1,3 mm is obtained.

Further test steps as per test instructions VDT-W-420/300.

2. ** Engagement of idle-speed aux. spring at shallowing-out of characteristic; no change allowable in idle delivery.

3. Setting the sensing finger:

Bring sensing finger into engagement at $n = 350 \text{ min}^{-1}$ with control lever in full-load position. Control-rod travel must be 0.2 - 0.5 mm (0.1-0.6) mm above full-load control-rod travel at $n = 1000 \text{ min}^{-1}$ and 1733 mbar (1300 mmHG)/setting without ALDA.

4. *** Correction of injection quantity at correction screw on ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.5. Shutoff check: Spring idle stop compressed.
at $n = 200 \text{ min}^{-1}$ max. control-rod travel = 5 mm.6. Pin projection dimension = $16.65 \pm 0.1 \text{ mm}$ 7. Checking the pneumatic shutoff:
Control lever in idle position. Drive injection pump at $n = 375 \text{ min}^{-1}$.
At $p_u = 450 \text{ mbar}$ (338 mmHG) (vacuum) control rod must move briskly to control-rod travel 0 mm.

8. Adjustment range between idle and full load = 35 - 39°

9. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

WPP 00 1/4 MB 3,0 m

4. Edition
En

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28-1
0 403 245 013
0 403 245 014 - Sales model

Use overflow valve 1 417 413 012

supersedes 8.84
company Daimler Benz
engine OM 617 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note: Before starting
testing, observe the
important instruc-
tions on the reverse.

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

2,10-2,20

mm (from BDC)

Control rod travel

without ALDA

(2,05-2,25)

19,5-22,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15 - 5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6		Rotational speed rev/min 8	Control rod travel mm 9
27-31	① min. 11 ② max. 11 ③ 5,7-5,8 ④ ** ⑤ -	100 320 365 - -	69	⑦ 12,1-12,3 ⑧ 11,2 ⑨ 4,0 ⑩ 0,0-1,0 ⑪ -	2180 2300-2320 2620-2720 2950 -		⑫ 100 ⑬ 1600 ⑭ 1000 ⑮ Switching point ⑯ 260-310(240-330)	20,5-21,5 13,1-13,3 13,5-13,6

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery		Full-load speed regulation		Variations in fuel delivery		Starting fuel delivery		
Test oil temp. 40°C (104°F)						Idle		Difference
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0	(12a)
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0 (1,5)	(15)
					375	(5,5-9,5)++	(1,5)	
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)	(16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

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Testing with ALDA

Point	min ⁻¹	cm ³ /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 (8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300
Suppl. 2, Ed. 2.

Set the control lever to an angle of 69°. Operate the fuel-injection pump at 1000 min⁻¹.

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49°. Operate the fuel-injection pump at 1000 min⁻¹. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300
Suppl. 2, Ed. 2.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

- *** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at $n=520-550 \text{ min}^{-1}$.

4. Adjusting the sensing lever

Place the control lever against the full-load stop. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at $n = 1000 \text{ min}^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.

6. Pin projection = $16.65 \pm 0.1 \text{ mm}$

7. Shutoff check: Operate the fuel-injection pump at $n = 200 \text{ min}^{-1}$. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = $38 - 42^\circ$.

10. ** Idle checking point

Test Specifications Fuel Injection Pumps and Governors

PES 5 MW 55/320 RS 16 RW 375/2290 MW 28-3
0 403 245 020
0 403 245 021 - Sales model

supersedes 6.84
company Daimler-Benz
engine OM 617 A-USA
92 kW (125 PS)

Testoil-ISO 4113

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC)
(2,05-2,25)
without ALDA 19,5-22,5

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in .

Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
27-31	min. 11	100	69	12,1-12,3	2180		100	20,5-21,5
	max. 11	320					1600	13,1-13,3
	5,7-5,8	365		11,2	2300-2320		1000	13,5-13,6
	**			4,0	2620-2720			
	-	-		0,0-1,0	2950			
	-	-		-	-			
							Switching point	
							260-310	(240-330)

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp. 40°C (104°F)					Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	0,5 (1,5)
					375	(5,5-9,5) **	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

12.85

BOSCH

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Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0)	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min⁻¹. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min⁻¹. Control-rod travel 8.8 - 9,5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at $n = 800 \text{ min}^{-1}$. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at $n = 520 - 550 \text{ min}^{-1}$ at the end of the characteristic curve.

4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at $n = 375 \text{ min}^{-1}$. Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at $n = 1000 \text{ min}^{-1}$.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.
6. Pin projection = $16.65 \pm 0.1 \text{ mm}$.
7. Stop - check: Drive the injection pump at $n = 200 \text{ min}^{-1}$. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at $n = 375 \text{ min}^{-1}$. At $P_u = 450 \text{ bar}$ (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.
9. Range of adjustment idle - full load = $38 - 42^\circ$.
10. ** Idle checking point.
11. Use overflow valve 1 417 413 012

Test Specifications Fuel Injection Pumps and Governors

En

PES 5 MW 55/320 RS 16

RW 375/2200 MW 29-1

0 403 245 022

0 403 245 023 - Sales model

supersedes 6.84

company Daimler-Benz

engine OM 617A-USA

92 kW (125 PS)

Test ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,10-2,20
(2,05-2,25)

mm (from BDC)

Control rod travel

19,5-22,5

without ALDA

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
27-31	① min. 11	100	69	⑦ 12,1-12,3	2180		⑫ 100	min. 55
	② max. 11	320		⑧ 11,2	2300-2320		⑬ 600	13,1-13,3
	③ 5,7-5,8	365		⑨ 4,0	2620-2720		⑭ 000	13,5-13,6
	④ **			⑩ 0,0-1,0	2950			
	⑤ -	-		⑪ -	-			
							⑮ Switching point	
							280-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery (19)		Full-load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery (18)		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0	6,0 (12a)
					365	10,0-11,0	0,5
						(8,5-12,5)	(1,5) (15)
					375	(5,5-9,5) **	(1,5)
					2550	24,0-30,0	2,5
						(23,0-31,0)	(3,0) (16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

12.85

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Testing with ALDA

Point	min ⁻¹	cm ³ /1000 strokes	Control-rod travel	Pressure (absolute)
18	1000	51,5-52,5 (50,5-53,5)	13,5 - 13,6	1733 mbar (1300 mmHg)
18a	*** 1000	41,0-43,0 (40,0-44,0)	-	1067 mbar (800 mmHg)
19	2180	50,0-52,0 (49,0-53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle 69°. Drive injection pump at 1000 min⁻¹. Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min⁻¹. Control-rod travel 8.8 - 9.5 mm must be reached.

2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at $n = 800 \text{ min}^{-1}$. Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

3. Setting the idle auxiliary spring (70)

** Set the idle auxiliary spring so that it just touches at $n = 520 - 550 \text{ min}^{-1}$ at the end of the characteristic curve.

4. Setting the sensing lever

Move the control lever to the full-load stop.
Drive the injection pump at $n = 375 \text{ min}^{-1}$. Set the sensing lever so that the control-rod travel lies $0.1 (0.1 - 0.2) \text{ mm}$ over full-load control-rod travel at $n = 1000 \text{ min}^{-1}$.

5. *** Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.
6. Pin projection = $16.65 \pm 0.1 \text{ mm}$.
7. Stop - check: Drive the injection pump at $n = 200 \text{ min}^{-1}$. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm .
8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at $n = 375 \text{ min}^{-1}$. At $P_u = 450 \text{ bar}$ (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm .
9. Range of adjustment idle - full load = $38 - 42^\circ$.
10. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 t 2

3. Edition

En

Testoil-ISO 4113

PES 5 MW 55/320 RS 16-1 RW 375/2200 MW 28-3
0 403 245 025
0 403 245 026-Sales model

supersedes 6.84
company Daimler-Benz
engine OM 617 A-USA
92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) 19,5-22,5 Control rod travel
(2,05-2,25)
without ALDA

Note: Before starting testing, observe the important instructions on the reverse.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,5+0,1	5,15-5,25	0,25 (0,3)			
365	5,7-5,8	1,0-1,1	0,05 (0,15)			
1600			0,25 (0,3)			
2180			0,25 (0,3)			

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1.

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

without ALDA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
27-31	① min. 11	100	69	⑦ 12,1-12,3	2180		⑫ 100	20,5-21,5
	② max. 11	320		⑧			⑬	
	③ 5,7-5,8	365		⑨ 11,2	2300-2320		⑭ 1600	13,1-13,3
	④ **			⑩ 4,0	2620-2720		1000	13,5-13,6
	⑤ -	-		⑪ 0,0-1,0	2950		⑥ Switching point	
	-	-		-	-		260-310 (240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load delivery ⑰		Full-load speed regulation ⑱a	Variations in fuel delivery ⑰		Starting fuel delivery idle ⑱b		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 ⑫a
					365	10,0-11,0 (8,5-12,5)	0,5 ⑮
			1000	51,5-52,5 (50,5-53,5)	375	5,5-9,5**	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 ⑮
							(3,0)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

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Testing with ALDA

Point	min ⁻¹	cm ³ /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 (8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300
Suppl. 2, Ed. 2.

Set the control lever to an angle of 69°. Operate the fuel-injection pump at 1000 min⁻¹.

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49°. Operate the fuel-injection pump at 1000 min⁻¹. Control-rod travel 8,8-9,5 mm must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300
Suppl. 2, Ed. 2.

Operate the fuel-injection pump at $n = 800 \text{ min}^{-1}$. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

- ** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at $n=520-550 \text{ min}^{-1}$.

4. Adjusting the sensing lever

Place the control lever against the full-load stop. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at $n = 1000^{-1}$.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.

6. Pin projection = $16.65 \pm 0.1 \text{ mm}$

7. Shutoff check: Operate the fuel-injection pump at $n = 200 \text{ min}^{-1}$. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at $n = 375 \text{ min}^{-1}$. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = $38 - 42^{\circ}$.

10. Testing and setting of control-rod travel sensor
with evaluation circuit
K5/EES - RWG.00 RBN - 40

Receiving inspection:

Set control lever so that a voltage of 2.1 ± 0.005 V is indicated on the digital voltmeter.

Set engine speed of 1000 1/min; fuel delivery of 27.5 - 28.5 ccm/1000 lifts must be reached.
Control lever at full-load stop (control-rod travel 13.5 - 13.6), voltage value 3.2 ± 0.08 V.

Setting the control-rod travel sensor:

At 1000 1/min set a fuel delivery of 27.5 - 28.5 ccm/1000 lifts with control lever. Move control-rod travel sensor until $U = 2.1 \pm 0.005$ V is indicated (tighten fastening screws to 3 Nm). Control lever at full-load stop (control-rod travel = 13.5 - 13.6); voltage of 3.2 ± 0.04 V must be reached.

11. ** Idle checking point

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 6,1 f

2. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119
RQV 300-1400 MW 58
0 403 446 151

supersedes 10.85
company: Volvo
engine: TD 61.3012
113 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,20-3,30}{(3,15-3,35)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,1+0,1	7,5-7,7	0,35 (0,6)			
300	6,5-6,6	1,6-2,0	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1480 1680	15,2-17,8 0-1,0				ca. 13	300 100	6,5-6,6 min.8,1		
ca. 60	9,0 4,0	1440-1450 1565-1595				③a				

Torque control travel a - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	75,0-77,0 (73,0-79,0)	1440-1450*			100	19-21 mm RW 140,0-160,0 (137,0-163,0)		
					300	16,0-20,0 (13,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 9,4a

2. Edition

En

PES 8 P 100 A 921/5 RS 286 RQV 325-1250 PA 445 KR
 1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$
 Values only apply to test nozzle-and-holder assembly
 1 688 901 017 and fuel-injection test tubing 9 681 271 023

supersedes 5.83

company: IHC

engine: DVT 573 B

Komb.-Nr. 0 402 058 04

Suction-gallery pressure 2,8 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,7-2,8$
 $(2,65-2,85)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	10,9-11,1	0,4			
325	5,0-5,1	1,7-2,3				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 63	8,6 4,0 1640	1290-1300 1505-1535 0-1,0	-	-	-	ca. 10	100 325 350-410=2,0	7,1-8,0 4,9-5,1	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,8 bar 109,0-111,0 (107,0-113,0)	1290-1300*	LDA 900	0,8 bar 115,0-121,0 (113,0-123,0)	100	min. 170,0	1250	9,6+0,1
			LDA 800	0 bar 73,0-81,0 (71,0-83,0)	325	17,0-23,0	900	10,1+0,1
							700	9,8+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

IHC 9,4a

-2-

Test at n = 800 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 8 P..RS 286 +RQV..PA 445 KR	0,11-0,16	0,82-0,87	Start end

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 k 1

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RSUV 300-750 P9A 322 R
Komb.-Nr. 0 401 870 077
1-10-5-7-2-11-6-8-3-12-4-9 je $30^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
KHD
company BA 12 M 816
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = $9,0-12,0$ mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control-lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
1	mm	mm rev/min	4	5	6	7	8	9	10	11
Loose	800	0,3-1,0	-	-	-	ca. 25	300	6,2	750	13,5-13,6
	x = 4,0						300	6,1-6,3	280	14,7-15,3
							300-360	= 2,0	450	13,5-13,6
ca. 62	12,5	790-800								
2a	4,0	810-840								
	970	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	mm
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 a

2. Edition

En

PE 6 P 120 A 420 LS 324 RSUV 250-600 P8A 321 R

supersedes 6.83

company KHD

engine BA 6 M 816

Komb.-Nr. 0 401 876 228

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9+0,1	29,5- 29,9	0,5 (0,9)			
250	6,0-6,2	2,0-2,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control-lever deflection in degrees 7			Lower rated speed rev/min 8			3 Torque control rev/min 10		Control rod travel mm 11	
loose	Control rod travel mm 2	Control rod travel mm rev/min 3	-	-	-	ca. 26	250	5,6	250	6,0-6,2 = 2,0	250-310	600 270 350	14,9-15,0 16,2-16,8 14,9-15,0		
	775	0,3-1,0													
	x = 4,0														
ca. 65	13,9	640-650													
2a	4,0	660-690													
	800	0,3-1,7													

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ...) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
cm ³ /1000 strokes 2		cm ³ /1000 strokes 5		cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		cm ³ /1000 strokes 7		mm 9	
Not known. Adjust according to		640-650*		-		100		19,5-21,0 mm RW		-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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3.85

F12

842

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 a 1

1. Edition

En

PE 6 P 130 A 420 LS 324-1 RSUV 250-600 P8A 321 R

Komb.-Nr. 0 401 876 282

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company

engine

KHD

BA 6 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,5+0,1	35,8-36,1	0,6(1,0)			
250	6,1-6,3	2,0- 2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Control-lever deflection in degrees rev/min 8			3 Torque control rev/min 10	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	Control rod travel mm 9			Control rod travel mm 11	
loose	800	0,3-1,0	-	-	-	ca. 26	250	5,7	600	13,5-13,6
		X = 4,0					250	6,1-6,3	230	14,7-15,3
							260-320	2,0	330	13,5-13,6
ca. 64	13,9	640-650								
2a	4,0	655-685								
	820	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery 5 Idle rev/min 6		4a Idle stop rev/min 8	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		Control rod travel mm 9	
Not known.		640-650*	-	-	-	-	-	-	-
Adjust according to		the engine records.							

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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F13

F13

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 d

2. Edition

En

PE 8 P 120 A 620/4 LS 325

RSV 250-1000 P 7 A 304

Komb.-Nr. 0 401 878 089

1-4-7-6-8-5-2-3 je $45^\circ \pm 0,5 (\pm 0,75^\circ)$

supersedes

6.83

company:

KHD

engine

BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) RW = 9,0 - 12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29,3-30,1)	0,5(0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7 x = 4,25	-	-	-	ca. 18	250	5,6	1000	14,9-15,0
ca. 60	13,9	1040-1050					250	6,0-6,2	300	16,2-16,8
2a	4,0	1060-1090					340-400	2,0	450	14,9-15,0
	1220	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Not known.		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-	
Adjust according to the engine records.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

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3.86

F14

F14

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 d 1

1. Edition

En

PE 8 P 130 A 620/4 LS 325-1 RSV 250-1000 P 7 A 304

Komb.-Nr. 0 401 878 110

1-4-7-6-8-5-2-3 je 45 ° ± 45 ° (± 0,75 °)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company KHD

engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,10$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,4-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,7	1000	13,5-13,6
		X = 5,0					250	6,1-6,3	300	14,7-15,3
							335-395	= 2,0	500	13,5-13,6
ca. 64	12,5	1040-1050								
2a	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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F15

F45

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 c 2

1. Edition

En

PE 8 P 130 A 620/4 LS 325-1 RSUV 250-800 P 10 A 318 R

Komb.-Nr. 0 401 878 111

1-4-7-6-8-5-2-3 je 45 ° ± 0,5 ° (±0,75 °)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company KHD

engine BA 8 M 816

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,5±0,1	35,8-36,1 (35,4-36,5)	0,6 (1,0)			
250	6,2-6,4	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
100%	800	0,3-1,0	-	-	-	ca. 18	250	5,8	800	13,5-13,6
	X = 4,0						250	6,2-6,4	300	14,7-15,3
							280-340	= 2,0	450	13,5-13,6
ca. 50%	12,5	840-850								
2a	4,0	865-895								
	1025	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
Test specifications on request.		840-850 *	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps (1A)

and Governors

40

WPP 001/4 KHD 20,2 g

1. Edition

En

PE 8 P 130 A 620/4 LS 325-1 RSUV 250-600 P 8 A 321 R

Komb.-Nr. 0 401 878 114

1-4-7-6-8-5-2-3 je 45 ° ± 0,5 ° (± 0,75 °)

supersedes: KHD

company:

engine BA 8 M 816

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	13,5+0,1	35,8-36,1 (34,5-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	775	0,3-1,0	-	-	-	ca. 25	250	5,7	600	13,5-13,6
	X = 4,0						250	6,1-6,3	230	14,7-15,3
							260-320	= 2,0	350	13,5-13,6
ca. 64	12,5	640-650								
2a	4,0	655-685								
	820	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request.		640-650 *		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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F17

F17

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 c 3

1. Edition

En

PE 8 P 130 A 620/4 LS 325-1 RSUV 250-800 P 10 A 347 R

Komb.-Nr. 0 401 878 113

1-4-7-6-8-5-2-3 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company KHD

engine BA 8 M 816

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	3,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 21	250	5,7	800	13,5-13,6
	X = 4,0						250	6,1-6,3	300	14,7-15,3
							280-340	= 2,0	450	13,5-13,6
ca. 56	12,5	840-850								
2a	4,0	865-895								
	1025	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
Test specifications on request.		840-850 *	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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3.86

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20.2 b 1

1. Edition

En

PE 8 P 130 A 420 LS 325-1
Komb.-Nr. 0 401 878 112

RS 250/1000 P. 1 A 422 R

supersedes -
company KHD
engine BA 8 M 816

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,6 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9				
100se	800 0,3-0,7 x = 5,0		-	-	-	FH ca.23 250 6,2			1000 13,5-13,6	
VHca.57						400-460 = 2,0			420 14,7-15,3	
FH full	12,5 1040-1050 4,0 1095-1125								550 13,5-13,6	
2a	1260 0,3-1,4					150-200				

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 15,2 e1
1. Edition

En

PE 6 P 130 A 420 LS 399-1 RSV 250-1000 P 7 A 460
Komb.-Nr. 0 401 876 2/9
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$
(1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,7	1000	13,5-13,6
	x = 5,0						250	6,1-6,3	300	14,7-15,3
ca. 64	12,5	1040-1050					355-415	5=2,0	500	13,5-13,6
2a	4,0	1065-1095								
	1230	0,3- 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit	③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)					Idle			
rev/min 1	cm ³ /1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	-	-	-	-	-	-
Test specifications on request.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 20,2 f

2. Edition

En

PE 8 P 120 A 620/4 LS 400 RSV 250-1000 P7A 460

Komb.-Nr. 0 401 878 100

1 - 4 = 7 - 6 - 8 - 5 - 2 - 3 je $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 6.83

company KHD

engine BA 8 M 816

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0 - 2,1$ mm (from BDC) RW = $9,0 - 12,0$ mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9±0,1	29,5-29,9 (29,3-30,1)	0,5 (0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5,75						250	6,0-6,2	300	16,2-16,8
							345-405	= 2,0	450	14,9-15,0
ca. 67	13,9	1040-1050								
	4,0	1080-1110								
2a	1250	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Not known.		1040-1050*	-	-	-	100	19,5-21,0 mm RW	-	-
Adjust according to the engine records.									

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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F21

F21

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 f1

1. Edition

En

PE 8 P 130 A 620/4 LS 400-1 RSV 250-1000 P 7 A 460

Komb.-Nr. 0 401 878 109

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company KHD

engine BA8M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,5+0,1	35,8-36,1 (35,4-36,5)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,7	1000	13,5-13,6
	x = 5,0						250	6,1-6,3	300	14,7-15,3
ca. 64	12,5	1040-1050					335-395	2,0	500	13,5-13,6
2a	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar	1040-1050*	-	-	-	-	-	-	-
Test specifications on request.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 g
1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-1000 P 4 A 304-1
Komb.-Nr. 0 401 876 289
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,10
(1,95-2,15) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,2	1000	15,0-15,1
	X = 5,0						300	5,6-5,8	350	16,2-16,8
							365-425	2,0	500	15,0-15,1
ca. 64	14,0	1040-1050								
2a	4,0	1095-1125								
	1260	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps 1A and Governors

WPP 001/4 KHD 15,2 g 1
1. Edition

40

En

PE 6 P 130 A 420 LS 484 RSUV 250-600 P 8 A 321 R
Komb.-Nr. 0 401 876 286
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
KHD
company
BA6M 816
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	15,0-15,1	35,8-31,6 (35,5-36,4)	0,6(1,0)			
250	5,7-5,9	2,0- 2,6 (1,7- 2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	775	0,3-1,0	-	-	-	ca. 25	250	5,3	600	15,0-15,1
	x = 4,0						250	5,7-5,9	230	16,2-16,8
							260-320	=2,0	330	15,0-15,1
ca. 65	14,0	540-650								
2a	4,0	660-690								
	825	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...				idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Test specifications on request.		640-650*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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F24

F24

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 g 2

1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-750 P 9 A 322-1
Komb.-Nr. 0 401 876 285
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA6M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$; RW = 9,0-12,0 mm
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.25	300	5,2	750	15,0-15,1
	$\chi = 4,0$						300	5,6-5,8	280	16,2-16,8
							325-385	= 2,0	450	15,0-15,1
ca.62	14,0	790-800								
2a	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

<div>2b</div> Full-load stop		<div>6</div> Rotational-speed limit		<div>3a</div> Fuel delivery characteristics		Starting fuel delivery		<div>5</div>		<div>4a</div> Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle					
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min		Control rod travel mm	
1	2	3		4	5	6	7	8		9	
Test specifications on request.		790-800*		-	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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G1

61

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2g3

1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-750 POA 322-2

Komb.-Nr. 0 401 876 326

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company KHD

engine BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
							320-380	=2,0	450	15,0-15,1
ca. 53	14,0	790-800								
2a	4,0	830-860								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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G2

62

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2g4

1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-1000 POA 347-1

Komb.-Nr. 0 401 876 290

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company

engine

KHD

BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	x = 2,0						300	5,6-5,8	280	16,2-16,8
							320-380	= 2,0	450	15,0-15,1
ca. 66	14,0	1040-1050								
2a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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G3

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD15,2g6

1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-750 POA 353

Komb.-Nr. 0 401 876 292

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company

engine

KHD

B A6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 25	300	5,7	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,3-16,9
							300-350	=2,0	450	15,0-15,1
ca. 62	14,0	790-800								
2a	4,0	815-845								
	980	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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G4

Test Specifications Fuel Injection Pumps (1A) and Governors

40
WPP 001/4 KHD 15,2g7
1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-1000 POA 354
Komb.-Nr. 0 401 876 288
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 6 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$
(1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	
loose	800	0,3-1,0	-	-	-	ca.22	300	5,2	1000	15,0-15,1
	x = 2,0						300	5,6-5,8	280	16,2-16,8
							320-380	= 2,0	450	15,0-15,1
ca. 66	14,0	1040-1050								
2a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		4a Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
Test specifications on request.		1040-1050*	-	-		-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 h

1. Edition

En

PE 6 P 130 A 420 LS 484-1 RSV 300-1000 P4A 460-1
Komb.-Nr. 0 401 876 291
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA 6 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Control-lever deflection in degrees rev/min			3 Torque control rev/min	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	7	8	9	10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 26	300	5,2	1000	15,0-15,1
	x = 5,0						300	5,6-5,8	350	16,2-16,8
							365-425	= 2,0	500	15,0-15,1
ca. 64	14,0	1040-1050								
2a	4,0	1095-1125								
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		4a Idle stop rev/min 8	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		Control rod travel mm 9	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 h

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSV 300-1000 P4A 304-1
Komb.-Nr. 0 401 878 128
1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
KHD
company BA 8 M 816
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Control-lever deflection in degrees			3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min							rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
loose	800	0,3-1,0 x = 5,0	-	-	-	ca. 26	300	5,2	1000	15,0-15,1	
ca. 64	14,0	1040-1050					300	5,6-5,8	350	16,2-16,8	
2a	4,0	1095-1125					365-425	= 2,0	500	15,0-15,1	
	1260	0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 ± 1

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSUV 250-600 P8A 321 R
Komb.-Nr. 0 401 878 121
1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
company KHD
engine BA 8 M 816

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0±0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	5,7-5,9	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	775	0,3-1,0	-	-	-	ca. 25	250	5,3	600	15,0-15,1
	x = 4,0						250	5,7-5,9	230	16,2-16,8
							250-320	= 2,0	350	15,0-15,1
ca. 65	14,0	640-650								
2a	4,0	660-690								
	825	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request.		640-650*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 ± 2

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSUV 300-750 POA 322-1
Komb.-Nr. 0 401 878 122
1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
company KHD
engine BA 8 M 816

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0±0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 25	300	5,2	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
							315-375	= 2,0	450	15,0-15,1
ca. 61	14,0	790-800								
2a	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request.		790-800*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 1

1. Edition

En

PE 8 P 130 A 620/4 LS 485

RSUV 300-750 POA 322-2

Komb.-Nr. 0 401 878 137

1-4-7-6-8-5-2-3 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company KHD

engine BA 8 M 816

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0±0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1
ca. 53 ②a	14,0	790-800					300	5,6-5,8	280	16,2-16,8
	4,0	830-860					320-380	= 2,0	450	15,0-15,1
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	rev/min 5	cm ³ /1000 strokes	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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3.86

G10

G10

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2i3

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSUV 300-1000 POA 347-1
Komb.-Nr. 0 401 878 127
1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company KHD
engine BA8M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,1) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	x = 2,0						300	5,6-5,8	280	16,2-16,8
							320-380	=2,0	450	15,0-15,1
ca. 66	14,0	1040-1050								
2a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

G11

6-11

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 20,2i4

1. Edition

En

PE8P 130 A 620/4 LS 485 RSUV 300-750 POA 347-3
Komb.-Nr. 0 401 878 135
1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company KHD

engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) RW = 9,0 - 12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			③ Torque control rev/min Control rod travel 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3								
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,7	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
							300-350	=2,0	450	15,0-15,1
ca. 53	14,0	790-800								
②a	4,0	820-850								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note: changed to ... rev/min 3		③a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery idle rev/min cm ³ /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
	cm ³ /1000 strokes 2								
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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Testoil-ISO 4113

G12

642

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2i5

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RSUV 300-750 P9A 353

Komb.-Nr. 0 401 878 124

1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel injection test tubing 1 680 750 067

supersedes

company

engine

KHD

BA8M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) RW = 9,0 - 12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7			Lower rated speed rev/min 8			3 Torque control rev/min 10		Control rod travel mm 11	
loose	Control rod travel mm 2	Control rod travel mm rev/min 3	-	-	-	ca.25			300	5,7		750	15,0-15,1		
	x=4,0								300	5,6-5,8		280			
ca.62	14,0	790-800							300-350	=2,0		450	15,0-15,1		
	4,0	815-845													
2a	980	0,3-1,7													

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
cm ³ /1000 strokes 2		cm ³ /1000 strokes 5		cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		cm ³ /1000 strokes 7		Control rod travel mm 9	
Test specifications on request.		790-800*		-		-		-		-	

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 20,2i6

1. Edition

En

PE8P130A 620/4 LS 485 RSUV 300-1000 POA 354

Komb.-Nr. 0 401 878 123

1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

KHD

company

BA8M816

engine

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.22	300	5,2	1000	15,0-15,1
	x=2,0						300	5,6-5,8	280	16,2-16,8
							320-380	=2,0	450	15,0-15,1
ca.66	14,0	1040-1050								
②a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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G14

G14

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 k

1. Edition

En

PE 8 P 130 A 620/4 LS 485 RS 250/1000 P1A 422 R

Komb.-Nr. 0 401 878 125

1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company KHD

engine BA 8 M 816

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) RW = 9,0 - 12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	5,8-6,0	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7 x = 5,0	-	-	-	FH ca. 24	250	5,9	1000	15,0-15,1
VH ca. 58							250	5,8-6,0	420	16,2-16,8
FH full	14,0	1040-1050					400-460	= 2,0	550	15,0-15,1
2a	4,0	1105-1135								
	1270	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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G15

6A5

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 m

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-600 P8A 322 R

Komb.-Nr. 0 401 870 081

1-10-5-7-2-11-6-8-3-12-4-9 je 30° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes:

company: KHD

engine: BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,2	600	15,0-15,1
	x = 4,0						300	5,6-5,8	220	16,2-16,8
							305-365	2,0	350	15,0-15,1
ca. 65	14,0	640-650								
2a	4,0	660-690								
	820	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Test specifications on request.		640-650*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 m 1
1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-750 P9A 322 R

Komb.-Nr. 0 401 870 082

1-10-5-7-2-11-6-8-3-12-4-9 je 30° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes:

company KHD

engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	
loose	800	0,3-1,0 x = 4,0	-	-	-	ca. 26	300	5,7	750	15,0-15,1
							300	5,6-5,8	280	16,2-16,8
							300-350	2,0	450	15,0-15,1
ca. 63 2a	14,0 4,0 980	790-800 815-845 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP C01/4 KHD 30,4 m 2

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-750 POA 322-3

Komb.-Nr. 0 401 870 087

1-10-5-7-2-11-6-8-3-12-4-9 je 30° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

KHD

company

BA 12 M 816

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) RW = 9,0 - 12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,7	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
							300-350	=2,0	450	15,0-15,1
ca. 53	14,0	790-800								
2a	4,0	820-850								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 m 4

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-750 P 9 A 350

Komb.-Nr. 0 401 870 084

1-10-5-7-2-11-6-8-3-12-4-9 30° ± 0,5° (± 0,75°)

supersedes

company KHD

engine BA 12 M 816

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0±0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,2	750	15,0-15,1
	X = 4,0						300	5,6-5,8	280	16,2-16,8
ca. 63	14,0	790-800					315-375	2,0	450	15,0-15,1
2a	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	5	6	7	8	9
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 m 5

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-750 P 9 A 350-1
Komb.-Nr. 0 401 870 088
1-10-5-7-2-11-6-8-3-12-4-9 30° ± 0,5° (± 0,75°)

supersedes
company KHD
engine BA 12 M 816

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 mm (from BDC)
(1,95-2,15) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed		3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1
	X = 4,0						300	5,6-5,8	280	16,2-16,8
							315-375	2,0	450	15,0-15,1
ca. 53	14,0	790-800								
2a	4,0	830-860								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request.		790-800*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 m 6

1. Edition

En

PE 12 P 130 A 920 RS 486
Komb.-Nr. 0 401 870 085

RSUV 300-1000 POA 352

supersedes

company KHD

engine BA 12 M 816

1-10-5-7-2-11-6-8-3-12-4-9 je $30^{\circ} \pm 0,5^{\circ}$ ($\pm 0,75^{\circ}$)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke $2,0-2,1$ mm (from BDC) RW = 9,0 - 12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	X = 2,0						300	5,6-5,8	280	16,2-16,8
							325-385	=2,0	450	15,0-15,1
ca. 67	14,0	1040-1050								
2a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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G21

621

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 n

1. Edition

En

PE 12 P 130 A 920 RS 486 RS 250/1000 P 1 A 422 R
Komb.-Nr. 0 401 870 086

supersedes
KHD
company
BA 12 M 816
engine

1-10-5-7-2-11-6-8-3-12-4-9 je $30^{\circ} \pm 0,5^{\circ}$ ($\pm 0,75^{\circ}$)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	FH ca. 24	250	5,3	1000	15,0-15,1
	X = 5,0						250	5,7-5,9	420	16,2-16,8
VH ca. 58							400-460	2,0	550	15,0-15,1
FH full	14,0	1040-1050								
2a	4,0	1105-1135								
	1270	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request.		1040-1050*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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G22

622

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 1

1. Edition

En

PE 8 P 130 A 620/4 LS 488
Komb.-Nr. 0 401 878 126

RSV 300-1000 P 4 A 460-1

supersedes
KHD
company
BA 8 M 816
engine

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 26	250	5,2	1000	15,0-15,1
	X = 5,0						250	5,6-5,8	350	16,2-16,8
							365-425	2,0	500	15,0-15,1
ca. 64	14,0	1040-1050								
2a	4,0	1095-1125								
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA	0,7 bar	1040-1050*	-	-	-	-	-	-	-
Test specifications on request.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

KHD 20,2 1

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 488 +RSV..P 4 A 460-1	0,90	0,45 0	15,0-15,1 14,0-14,1 13,0-13,1

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 g 1

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-600 P 8 A 322 R

1-6-4-5-8-3-2-7

0-75-90-120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 131

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	15,0±0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,2	600	15,0-15,1
	X = 4,0						300	5,6-5,8	220	16,2-16,8
							305-365	2,0	350	15,0-15,1
ca. 65	14,0	640-650								
2a	4,0	660-690								
	825	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Test specifications on request. Pumps operates in tandem.		640-650*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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Testoil-ISO 4113

H1

HA

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 g 3

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-750 POA 322-3

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

i 688 901 019 and fuel-injection test tubing i 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 136

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1
(1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,7	750	15,0-15,1
	X = 4,0						300	5,6-5,8	280	16,2-16,8
ca. 53	14,0	790-800					300-350	2,0	450	15,0-15,1
2a	4,0	820-850								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
Test specifications on request. Pumps operates in tandem.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

H2

H2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 g 4

1. Edition

En

PE 8 P 130 A 920/5 RS 489

RSUV 300-1000 POA 348

1-6-4-5-8-3-2-7

0-75-90-120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

KHD

company

BA 16 M 816

engine

Komb.-Nr. 0 401 878 129

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	300	5,2	1000	15,0-15,1
	X = 2,0						300	5,6-5,8	280	16,2-16,8
							325-385	2,0	450	15,0-15,1
ca. 67	14,0	1040-1050								
2a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Test specifications on request. Pumps operates in tandem.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

H3

H3

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 g 5

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-750 P 9 A 350

1-6 - 4-5 - 8 - 3 - 2 - 7

0-75-90-120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

KHD

company

BA 16 M 816

engine

Komb.-Nr. 0 401 878 133

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,2	750	15,0-15,1
	x = 4,0						300	5,6-5,8	280	16,2-16,8
ca. 63	14,0	790-800					315-375	= 2,0	450	15,0-15,1
②a	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	790-800 *		-	-	-	-	-	-
Test specifications on request. Pumps operates in tandem.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

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H4

H4

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 g

1. Edition

En

PE 8 P 130 A 920/5 RS 489 RSUV 300-1000 POA 352

supersedes-

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 130

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0±0,1	35,8-36,1	0,6(1,0)			
300	5,6-5,8	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	X = 2,0						300	5,6-5,8	280	16,2-16,8
							325-385	2,0	450	15,0-15,1
ca. 67	14,0	1040-1050								
2a	4,0	1070-1100								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Not known.		1040-1050	-	-	-	-	-	-	-
Adjust according to the engine records.									
Pumps operates in tandem.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

H5

H5

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 K

5. Edition

En

PE 8 P 120 A 320 LS 3807 RQV 300-1150 PA 545

1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes 4.85

company: Daimler-Benz

engine: OM 422 A

243 kW (330 PS)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 401 848 732

Note VDT-I-420/117!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ mm (from BDC)
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7+0,1	15,8-16,0	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
600						
900	-	C, Sp. 1 - 5	0,7(1,2)			
500						

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings (New version - with auxiliary max-speed governor spring)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 17	100	min. 6,7	300	1,6-1,8
ca. 54	9,7 4,0 1350	1190-1200 1235-1265 0-1,0					300	5,0-5,2	800	6,0-6,2
							335-405 = 2,0		1200	8,1-8,3
									1260	9,9

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 157,5-159,5 (154,5-162,5)	1190-1200*	LDA 900	0,7 bar 165,0-169,0 (162,0-172,0)	100	140,0-160,0 (136,0-164,0)	1150	10,7+0,1
LDA 600	0,7 bar 167,0-173,0 (164,0-176,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)			600	11,4+0,1
							900	10,8+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

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Testoil-ISO 4113

B. Governor Settings (Old version - without auxiliary max-speed governor spring)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1190	15,2-17,8	-	-	-	ca. 17	100	min. 6,7	300	1,6-1,8
ca. 54	9,7 4,0 1350	1190-1200 1235-1265 0-1,0					300 335-405=2,0	5,0-5,2 2,0	800 1200 1260	6,0-6,2 8,1-8,3 9,9
						(3a)				

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 157,5-159,5 (154,5-162,5)	1190-1200*	LDA 900	0,7 bar 165,0-169,0 (162,0-172,0)	100	140,0-160,0 (136,0-164,0)	1150 600 900	10,7+0,1 11,4+0,1 10,8+0,2
LDA 600	0,7 bar (167,0-173,0) (164,0-176,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113**D. Adjustment Test for Manifold Pressure Compensator**Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE8P...LS 3807 + RQV...PA 545	0	0,40 0,47	10,3-10,4 10,4-10,5 10,9-11,1

En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 k 1

3. Edition

En

PE 8 P 120 A 320 LS 3807 RQV 300-1150 PA 545-1

1-8-7-2-6-3-5-4- je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

Note VDT-I-420/ 117!

supersedes 4.85

company: Daimler-Benz

OM 422 LA

engine: 276 kW

Komb.-Nr. 0 401 848 754

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Cyl.8

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	12,0+0,1	18,2-18,4	0,5(0,9)			
300	4,8-5,0	1,2-2,0	0,8(1,2)			
750	-	C, Sp. 4 u. 5	(1,2)			
500						

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings (New version - with auxiliary max-speed governor spring)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1190	15,2-17,8	-	-	-	ca. 17	100 300	min. 6,5 4,8-5,0	300 800	1,6-1,8 6,0-6,2
ca. 55	11,0 4,0 1400	1190-1200 1235-1265 0-1,0					330-400=2,0		1200 1270	8,6-8,8 10,0

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 182,0-184,0 (179,0-187,0)	1190-1200*	LDA 750	0,7 bar 195,0-198,0 (192,0-201,0)	100	140,0-160,0 (136,0-164,0)	1150 750	12,0+0,1 12,4+0,1
			LDA 500	0 bar 141,0-143,0 (138,0-146,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

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Testici-ISO 4113

B. Governor Settings (Old version - without auxiliary max-speed governor spring) -2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 11	100	min. 6,5	300	1,6-1,8
ca. 65	11,0	1190-1200					300	4,8- 5,0	800	4,6-5,0
	4,0	1235-1265							1200	8,4-8,7
	1400	0-1,0				320-460			1265	9,9
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1190-1200*	LDA	0,7 bar	100	140,0-160,0	1150	12,0±0,1
1150	182,0-184,0 (179,0-187,0)		750	195,0-198,0 (192,0-201,0)		(136,0-164,0)	750	12,4±0,1
			LDA	0 bar				
			500	141,0-143,0 (138,0-146,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113**D. Adjustment Test for Manifold Pressure Compensator**Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE 8 P..LS 3807 +RQV..PA 545-1	0	0,40 0,55	10,5-10,7 11,1-11,4 12,2-12,6

En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d

6. Edition

En

PE 10 P 110 A 320 LS 3818 RQV 300-1150 PA 486-2

1- 8- 7- 6- 3- 5- 2- 10- 9- 4

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

Komb.-Nr. 0 401 849 706

Note VDT-I-420/117!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 1.85

company: Daimler-Benz

engine: OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 706

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke		mm (from BDC)		Cyl.10; RW = 9,0 - 12,0 mm		
4,0-4,1 (3,95-4,15)						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,4-12,6	0,4 (0,8)			
300	8,5-8,7	1,4-2,2	0,4 (0,7)			
600	-	C, Sp. 4 + 5	0,6 (0,9)			
900	-					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings (New version - with auxiliary max-speed governor spring)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1190	15,2-17,8	-	-	-	ca. 23	100	min.10,2	300	1,6-1,8
ca. 55	11,1	1190-1200					800	8,5-8,7	800	5,8-6,2
	4,0	1235-1265					430-490	= 2,0	1200	8,2-8,4
	1400	0 - 1,0							1260	10,0
						3a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1150	124,0-126,0 (121,5-128,5)	1190-1200*	600	110,0-114,0 107,0-117,0	100	140,0-160,0 (136,0-164,0)	1150	12,1+0,1	
			900	118,0-123,0 115,0-126,0			600	12,5+0,1	
							900	12,4+0,2	

Checking values in brackets

* 1-mm less control rod travel than col. 2

B. Governor Settings (old version - without auxiliary max-speed governor spring)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 19	100	min. 10,2	250	1,0-1,2
ca. 65	11,1 4,0 1400	1190-1200 1240-1270 0-1,0				330-470	300	8,5-8,7	550 850 1150	3,4-3,7 4,9-5,3 7,6
						(3a)				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10
1150	124,0-126,0 (121,5-128,5)	1190-1200*	600	110,0-114,0 (107,0-117,0) 118,0-123,0 (115,0-126,0)	100	140,0-160,0 (136,0-164,0)	1150	12,1+0	1
			900				600	12,5+0	1
							900	12,4+0	2

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure CompensatorTest at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm

En

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 9,0 a

2. Edition

En

PE 6 P 120 A 320 RS 7102
Komb.-Nr. 0 402 746 800

RQV 200-1100 PA 712-1

supersedes 3.85
company: Scania
engine: DS 9 01

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

5,0-5,1

(4.95-5.15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	16,3-16,5	0,6(0,9)			3,3 [±] 0,1 (3,0-3,5)
225	4,8-5,0	1,5-1,9	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 10	100	min. 6,3	225	0,9-1,0
ca. 63	11,0 4,0 1450	1140-1150 1280-1310 0-1,0					225 4,8-5,0 300-360=2,0		350 420 550 1140	2,3-3,2 3,7-4,5 5,0-5,2 8,8

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 700	0,9 bar 163,0-165,0 (160,0-168,0)	1140-1150*	LDA 1100	0,9 bar 164,0-172,0 (162,0-174,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 141,0-145,0 (139,0-147,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

SCA 9,0 a

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 7102 +RQV..PA 712-1	0,90	0 0,42 0,38	12,0-12,1 11,3-11,4 11,7-11,8 11,5-11,7

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PE 6 P 120 A 720 RS 7118 RQV 250-1100 PA 785

Komb.-Nr. 0 402 646 831

supersedes-

company: Steyr

engine: WD 615.68

228 kW

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{4,3-4,5}{(4,25-4,45)}$ mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7±0,1	18,1-18,3	0,5(0,9)			3,3 ± 0,1
250	5,7-5,9	1,5-2,1	0,8(1,2)			(3,0-3,5) **

** Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 2,9-3,1 mm.

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 14	100	min.7,2	200	0,7-0,9
ca. 48	11,7 4,0 1350	1140-1150 1225-1255 0-1,0					250 275-375	5,7-5,9	500 800 1100	3,1-3,3 5,5-5,7 8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point	Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min
1	2	3	4	5	6	7	8
LDA 1100	1,2 bar 181,0-183,0 (178,0-186,0)	1140-1150*	LDA 700	1,2 bar 190,0-196,0 (187,0-199,0)	100	225,0-265,0 (221,0-269,0)	-
			LDA 700	0 bar 143,0-145,0 (140,0-148,0)			-

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

STE 9,7 d 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS 7118 +RQV..PA785	1,20	0 0,57 0,36	12,7-12,8 10,3-10,4 12,1-12,2 10,8-11,0

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 6/11 F 1800 L 19-7
0 460 416 025

En
Overflow temperature 45° C

supersedes 4.84
company: Volvo
engine: TAMD 40 B - 121 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Bench and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,6 - 3,0 mm		
1.2 Supply-pump pressure	1500	6,2 - 6,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	80,5-81,5 cm ³ /1000 strokes		3,0 (3,5)
1.4 Idle regulation	400	8,5-12,5 cm ³ /1000 strokes		3,0 (3,5)
1.5 Full-speed regulation	2050	7,5-14,5 cm ³ /1000 strokes		
1.6 Start	100	min. 60,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,7-1,5 (0,4-1,8)	1500 (2,1-3,5)	1770 3,6-4,4 (3,3-4,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,3-2,9	1770 7,1-7,7	
Overflow delivery	n = rev/min cm ³ /10 s	600 41-83 (26-98)	1800 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2130 2050 1900 1770 1500 600	max. 2,5 (6,5-15,5) 43,5-49,5 (42,0-51,0) 75,5-77,5 (73,9-79,1) (78,4-83,6) 70,0-74,0 (68,6-75,4)	
switch-off			
Idle stop	500 400 120 220	max. 2,5 (6,0-15,0) min. 60 max. 60	
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 2,3
A XK	18,7-20,7
B XL	10,9-14,2

Observations

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 6/11 F 1800 L 19-10 Overflow temperature 45° C
0 460 416 045

supersedes
company: Volvo
engine: TAMD 40 B -121 kW

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,6 - 3,0 mm		
1.2 Supply-pump pressure	1500	6,2 - 6,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	80,5-81,5 cm ³ /1000 strokes		3,0 (3,5)
1.4 Idle regulation	400	8,5-12,5 cm ³ /1000 strokes		3,0 (3,5)
1.5 Full-speed regulation	2050	7,5-14,5 cm ³ /1000 strokes		
1.6 Start	100	min. 60,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,7-1,5 (0,4-1,8)	1500 (2,1-3,5)	1770 3,6-4,4 (3,3-4,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,3-2,9	1770 7,1-7,7	
Overflow delivery	n = rev/min cm ³ /10 s	600 41-83 (26-98)	1800 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2130 2050 1900 1770 1500 600	max. 2,5 (6,5-15,5) 43,5-49,5 (42,0-51,0) 75,5-77,5 (73,9-79,1) (78,4-83,6) 70,0-74,0 (68,6-75,4)	
switch-off			
Idle stop	500 400	max. 2,5 (6,0-15,0)	
End stop	120 220	min. 60 max. 60	
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 2,3
A XK	18,7-20,7
B XL	10,9-14,2

Observations

24 V Pulling
electromagnet

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 6/11 F 1625 L 19-11 Overflow temperature 45° C
0 460 416 052

supersedes -
company: Volvo-Penta
engine: TAMD 40 B - 105 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,6-3,0 mm		
1.2 Supply-pump pressure	1500	6,2-6,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	72,5-73,5 cm ³ /1000 strokes		3,5
1.4 Idle regulation	400	8,5-12,5 cm ³ /1000 strokes		3,5
1.5 Full-speed regulation	1900	15,0-23,0 cm ³ /1000 strokes		
1.6 Start	100	min. 60,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,7-1,5 (0,4-1,8)	1500 (2,1-3,5)	1625 3,0-3,8 (2,7-4,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,3-2,9		1625 6,7-7,3
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		1625 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2000 1900 1800 1625 1500 600	max. 10,0 (14,5-23,5) 32,5-38,5 (31,0-40,0) 66,0-69,0 (64,8-70,2) 72,5-73,5 (70,3-75,7) 58,0-62,0 (56,7-63,4)	
switch-off			
Idle stop	580 500 400	0 max. 2,0 (6,0-15,0)	
End stop	110 210	min. 60,0 max. 50,0	
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 4,9
A	
B	
Observations pushing electromagnet 24 V	

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 Sof 2,5 g

2. Edition

En

Testoil-ISO 4113

 VE 4/9 F 2100 R 22-5
 0 460 494 109

Overflow temperature 45° C

 supersedes 4.82
 company: Sofim
 engine: 8140.61.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04) mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1800	7,4-7,8 mm		
1.2 Supply-pump pressure	1800	6,3-6,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	2000	37,5-38,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	370	8,0-12,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	2350	19,0-25,0 cm ³ /1000 strokes		
1.6 Start	100	min. 55,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1800	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,8-2,8(1,6-3,0)	1800 (5,9-8,3)	2100 8,4-9,2(8,1-9,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,9-3,5		2100 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		2100 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2350 2100 2000 1100 600	max. 4,5 (18,0-26,0) 36,7-39,3 (35,7-40,3) (35,7-40,3) 43,5-46,5 (42,7-47,3) 35,3-35,8 (33,8-39,8)	
switch-off	2100	0	
Idle stop	370 420 500	(6,0-14,0) min. 1,5 max. 3,0	
End stop	400 480	min. 37 32,0-38,0	
2.4 Solenoid	— cut-in voltage min 10 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,4-5,6
MS	1,7-1,9
SVS	max. 2,7
A	
B	

Observations

BOSCH

 Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VW 2,3b1

3. Edition

En

Testoil-ISO 4113

 VE 6/10 F 2400 L 32
 0 460 406 003

Overflow temperature 45° C

supersedes 3.85

company: VW

engine: 087/10

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2700	6,0-12,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,8-3,2)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm ²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	600		2400
	cm ³ /10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	2700 2600 2400 1500 750	(5,0-13,0) 15,0-22,0 (14,5-22,5) 22,0-24,0 (20,8-25,2) (26,8-31,2) 26,0-29,0 (24,5-30,5)		K KF MS SVS 3,2-3,4 6,4-6,6 1,4-1,6 max. 3,0
switch-off				
electr.	400	0		A XK B XL 18,5-20,5 9,2-12,9
Idle stop	375	(4,0-12,0)		
End stop	600 400 500	1,0-7,0 min. 20,0 max. 25,0		
2.4 Solenoid	cut-in voltage	min. 10,0 V		
		rated voltage 12 V.		

Observations

BOSCH

 Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 6/10 F 2400 L 32-1 (P)

0 460 406 009;

010

Overflow temperature 45° C

supersedes 3.85

company: VW

engine: 087/10 Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2700	6,0-12,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,8-1,6 (0,5-1,9)	1500 (2,3-3,7)	2400 5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4		2400 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		2400 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750	(5,0-13,0) 15,0-22,0 (14,5-22,5) 22,0-24,0 (20,8-25,2) (26,8-31,2) 26,0-29,0 (24,5-30,5)	
switch-off			
mech. electr.	2400 400	0 0	
Idle stop	375 600	(4,0-12,0) max. 4,0	
End stop	400 500	min. 20 max. 25	
2.4 Solenoid	cut-in voltage	min 10 V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max. 3,0
A B	
XK	18,5-20,5
XL	9,2-12,9

Observations

Stop check (lever) at
n = 2400 min/1

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 2,4 k

3. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 L 32-2 Overflow temperature 45° C
0 460 406 037

supersedes 3.85
company: VWV
engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	2700	6,0-12,0 cm ³ /1000 strokes		
1.6 Start	100	min. 35 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm ²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	600		2400
	cm ³ /10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800	max. 4,0	
	2700	(5,0-13,0)	
	2400	22,0-24,0 (20,7-25,3)	
	1500	(26,7-31,3)	
	750	26,0-29,0 (24,5-30,5)	
switch-off	70-400	0	
Idle stop	375	(4,0-12,0)	
End stop	600	max. 4,0	
	400	min. 20,0	
	500	max. 25,0	
2.4 Solenoid	cut-in voltage	min. 10 V	
		rated voltage 12 V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 6/10 F 2400 L 32-3

0 460 406 038

Overflow temperature 45° C

 superseded 3.85
 company: VW
 engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	2700	6,0-12,0 cm ³ /1000 strokes		
1.6 Start	100	min. 35 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,8-1,6 (0,5-1,9)	1500 (2,3-3,7)	2400 5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4		2400 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2700 2400 1500 750	max. 4,0 (5,0-13,0) 22,0-24,0 (20,7-25,3) (26,7-31,5) 26,0-29,0 (24,5-30,5)	
switch-off			
electr.	70-400	0	
mech.	2400	0	
Idle stop	600 375	max. 4,0 (4,0-12,0)	
End stop	400 500	min. 20,0 max. 25,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

2.4 Solenoid	— cut-in voltage min 10 V rated voltage 12 V.
--------------	--

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 1,3 A

2.Edition

En

VE 4/8 F 2500 R 61

Overflow temperature 45° C

0 460 484 006

 supersedes
company: FIAT/FIASA
engine: X 8/29

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1600	5,6-6,0 mm		
1.2 Supply-pump pressure	1600	4,5-5,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1600	20,0-21,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	8,0-14,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 29,0 cm ³ /1000 strokes		
1.6 Start	2650	9,0-15,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1600	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,4-3,2(2,1-3,5)	1600 (5,1-6,5)	2000 7,8-8,4(7,4-8,8)	2400 9,4-10,2(9,1-10,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,1-1,7		2500 7,2-7,8	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2500 55-110(40-125)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800-2950		
	2750	2,0-8,0 (1,0-9,0)	
	2650	(8,0-16,0)	
	2500	19,3-21,7 (18,2-22,8)	
	2000	20,0-22,0 (18,7-23,3)	
	1600	(18,2-22,8)	
	600	16,0-19,0 (14,5-20,5)	
switch-off	2500	0	
Idle stop	550	0	
	450	max. 4,0	
	350	(7,0-15,0)	
End stop	400	min. 24,0	
	500	max. 26,0	
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,5
SVS	max. 3,0
* FH	1,8-2,4
^A XK	20,2-22,2
^B XL	8,8-12,2

Observations

 * operating stroke
(cold-start accel.)

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4.86

H24

H24

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 IHC 5,8 t 1

1. Edition

En

Testoil-ISO 4113

 VE 6-12 F 1350 R 64-1 Overflow temperature 45° C
 0 460 426 089

 supersedes IHC
 company:
 engine: D 358/PC 11

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1150	5,2-5,6 mm		
1.2 Supply-pump pressure	1150	5,6-6,2 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1150	84,0-85,0 cm ³ /1000 strokes		3,5 (4,5)
1.4 Idle regulation	500	14,5-20,5 cm ³ /1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1430	44,0-50,0 cm ³ /1000 strokes		
1.6 Start	100	min. 100,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,6-2,4 (1,3-2,7)	1150 (4,7-6,1)	1300 5,3-6,1 (5,0-6,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,7-3,3	1300 6,0-6,6	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-163)	1350 55-138 (40-158)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1540	max. 2,0	
	1480	9,0-17,0 (8,0-18,0)	
	1430	(42,0-52,0)	
	1300	80,0-83,0 (78,5-84,5)	
	1150	(81,5-87,5)	
	800	77,0-81,0 (76,0-82,0)	
	500	65,0-70,0 (63,7-71,3)	
switch-off			
Idle stop	570	max. 1,0	
	520	min. 4,0	
	500	(12,5-22,5)	
End stop	250	min. 100	
	350	max. 80	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max. 6,0
A XK	20,2-22,2
B XL	15,8-19,8

Observations

2.4 Solenoid

— cut-in voltage

min. 10 V
rated voltage 12 V
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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 BMW 2,4c

2. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 R 118-1

0 460 406 041

Overflow temperature 45° C

DHK 1 688 901 022/130 bar

Fuel injection test tubing 1 680 750 073

 supersedes 7.84
 company: BMW-USA Ford
 engine: M 21 D 24

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	6,5-6,9 mm	1,050	
1.2 Supply-pump pressure	1500	5,9-6,5 bar (kgf/cm ²)	1,050	
1.3 Full-load delivery with charge-air pressure	1500	39,5-40,5 cm ³ /1000 strokes	1,050	max. 3,0
Full-load delivery without charge-air pressure	500**	22,0-23,0 cm ³ /1000 strokes	0	max. 3,0
1.4 Idle regulation	400**	6,0-10,0 cm ³ /1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0 cm ³ /1000 strokes	1,050	max. 5,0
1.6 Start	250**	35,0-37,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 3,8-4,6(3,5-4,9)	1500 (6,0-7,4)	1500** 0	2000 8,2-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 4,4-5,0		2300 7,2-7,8	
Overflow delivery	n = rev/min cm ³ /10 s	500 42-83(27-98)		2400 55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750* 500**	7,0-13,0 (6,0-14,0) (16,0-24,0) 39,5-41,5 (38,2-42,8) (37,7-42,3) 33,0-34,0 (30,5-36,5) (19,5-25,5)	1,050 1,050 1,050 1,050 0,5 0
switch-off			
Idle stop	400**	(4,0-12,0)	
Exhaust gas recirculation driver	450**	max. 3,0	
Start Inspection	850***	16,0-18,0(15,0-19,0)	
point	100**	27,0-37,0(20,0-42,0)	
Limit stop	400**	28,0-38,0(25,0-41,0)	
	480**	19,2-23,8(16,5-26,5)	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	3,0
A	
B	

Observations

* LDA-stroke 17,5 mm
 ** Supply 12 volts to the solenoid valve
 *** Adjustment point for AGR back

See page 2

2.4 Solenoid	cut-in voltage min 10 V rated voltage 12 V.
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- 2 -

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.
(Do not apply voltage to solenoid-operated valve.)

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 BMW 2,4 c 1

1. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 R 118-2

0 460 406 050

DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

Overflow temperature 45° C

supersedes-

company: BMW-USA Ford

engine: M 21 D 24

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	6,5-6,9 mm	1,050	
1.2 Supply-pump pressure	1500	5,9-6,5 bar (kgf/cm ²)	1,050	
1.3 Full-load delivery with charge-air pressure	1500	39,0-40,0 cm ³ /1000 strokes	1,050	max. 3,0
Full-load delivery without charge-air pressure	500**	21,5-22,5 cm ³ /1000 strokes	0	max. 3,0
1.4 Idle regulation	400**	6,0-10,0 cm ³ /1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0 cm ³ /1000 strokes	1,050	max. 5,0
1.6 Start	250**	35,0-37,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 3,8-4,6(3,5-4,9)	1500 (6,0-7,4)	1500** 0	2000 8,2-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 4,4-5,0		2300 7,2-7,8	
Overflow delivery	n = rev/min cm ³ /10 s	500 42-83(27-98)		2400 55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750* 500**	7,0-13,0 (6,0-14,0) (16,0-24,0) 39,5-41,5 (38,2-42,8) (37,2-41,8) 32,5-33,5 (30,0-36,0) (19,0-25,0)	1,050 1,050 1,050 1,050 0,5 0
switch-off			
Idle stop	400** 450**	(4,0-12,0) max. 3,0	
Exhaust gas reci- culation driver	850*** 100**	16,0-18,0 (15,0-19,0) 27,0-37,0 (20,0-42,0)	
Start Inspection point	400** 480**	28,0-38,0 (25,0-41,0) 19,2-23,8 (16,5-26,5)	
Limit stop			
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	3,0
A	
B	

Observations

- * LDA-stroke 7,5 mm
 - ** Supply 12 volts to the solenoid valve
 - *** Adjustment point for AGR back
- See page 2

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- 2 -

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.

(Do not apply voltage to solenoid-operated valve.)

Test Specifications

Distributor-type

Fuel-injection Pumps

En

Testoil-ISO 4113

VE 6/12 F 1400 R 120-4 Overflow temperature 45° C
0 460 426 036

supersedes 1.85
company: MAN
engine: DO 226 MC

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02(0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	800	3,5-3,9 mm	0,8	
1.2 Supply-pump pressure	800	5,1-5,7 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1000	112,0-113,0 cm ³ /1000 strokes	0,8	4,0 (4,5)
Full-load delivery without charge-air pressure	630	85,5-86,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	300	10,0-16,0 cm ³ /1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1440	92,0-100,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 70,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 1,2-2,0 (0,9-2,3)	800 (3,0-4,4)	1100 4,9-5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,8-4,4	1100 6,1-6,7	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)	1400 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1650	max. 1,0	0,8
	1550	26,0-34,0 (25,0-35,0)	0,8
	1440	(91,0-101,0)	0,8
	1400	108,0-112,0 (107,0-113,0)	0,8
	1000	(109,5-115,5)	0,8
	800	110,0-114,0 (109,0-115,0)	0,8
	630	112,0-116,0 (110,3-117,7)	0,8
	* 630	106,5-107,5 (103,3-110,7)	0,4
	630	(82,3-89,7)	0
switch-off			
Idle stop	300	(8,0-18,0)	
	350	max. 5,0	
	400	max. 1,0	
End stop	230	min. 100	
	400	max. 100	
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	
KF	5,7 - 6,0
MS	1,0 - 1,2
SVS	
A	25,0-27,0
B	13,5-16,8

Observations

LDA-stroke 4,5 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 BMW 2,4a

2. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 R 121

Overflow temperature 45° C

0 460 406 022
DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

superseded 10.83

company: BMW

engine: M 21 D 24-Europa

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,1-4,5 mm	1,050	
1.2 Supply-pump pressure	1500	6,1-6,5 bar (kgf/cm ²)	1,050	
1.3 Full-load delivery with charge-air pressure	1500	39,5-40,5 cm ³ /1000 strokes	1,050	max. 3,0
Full-load delivery without charge-air pressure	500	28,0-29,0 cm ³ /1000 strokes	0	max. 3,0
1.4 Idle regulation	400	6,0-10,0 cm ³ /1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0 cm ³ /1000 strokes	1,050	max. 5,0
1.6 Start	250	35,0-37,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	500*	750	1000*	1500	2300
LDA=1,050 bar	mm	1,3-2,1 (1,0-2,4)		(3,6-5,0)		7,4-8,2 (7,1-8,5)
2.2 Supply pump	n = rev/min	500			2300	
LDA=1,050 bar	bar (kgf/cm ²)	3,2-3,6			8,1-8,5	
Overflow delivery	n = rev/min	500			2300	
	cm ³ /10 s	41-83 (26-98)			55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700	7,0-13,0 (6,0-14,0)	1,050
	2600	(16,0-24,0)	1,050
	2400	39,5-41,5 (38,2-42,8)	1,050
	1500	(37,7-42,3)	1,050
	750**	34,0-35,0 (31,5-37,5)	0,50
	500	(25,5-31,5)	0
switch-off			
Idle stop	400	(4,0-12,0)	
	475	max. 3,0	
End stop	100	27,0-37,0 (20,0-42,0)	
	400	32,0-42,0 (29,0-45,0)	
	480	25,2-29,8 (22,5-32,5)	
2.4 Solenoid	cut-in voltage min 10 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,5-1,7
SVS	4,0
A XK	20,2-22,2
B XL	9,5-12,8

Observations
* Check hydr. cold-start accelerator for operation: See page 2

** LDA-stroke 4,3 mm
Use adjusting nut (46) to correct.

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* Test hydr. cold-start accelerator:

Apply 12 V to magnet of hydr. cold-start accelerator.

500 1/min 1.9 - 2.9 (1.7-3.1)

1000 1/min 3.7 - 4.7 (3.5-4.9)

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

 VE 6/12 F 1100 R 166
 0 460 426 037

Overflow temperature 45° C

 supersedes
 company: MAN
 engine: DO 226 MTE 51

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

 Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	700	3,3-3,7 mm		
1.2 Supply-pump pressure	700	4,3-4,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	700	90,5-91,5 cm ³ /1000 strokes		4,0 (4,5)
1.4 Idle regulation	300	13,0-19,0 cm ³ /1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1230	18,0-24,0 cm ³ /1000 strokes		
1.6 Start	100	min. 80 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	700	-		

2. Test Specifications checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 1,5-2,3 (1,2-2,6)	700 (2,8-4,2)	900 3,7-4,5 (3,4-4,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,3-3,9	1100 5,9-6,5	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)	1100 55-138 (40-153)	

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1280	max. 1,0	
	1230	(16,0-26,0)	
	1170	70,0-78,0 (69,0-79,0)	
	1100	89,5-92,5 (88,0-94,0)	
	900	91,0-95,0 (90,0-96,0)	
	700	(88,0-94,0)	
	500	91,0-95,0 (89,3-96,7)	
switch-off			
Idle stop	300	(11,0-21,0)	
	330	3,0-9,0 (1,0-11,0)	
	370	max. 1,0	
End stop	350	min. 101,0	
	450	max. 101,0	
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12 V.		

3. Dimensions <small>for assembly and adjustment mm</small>	
Designation	
K	-
KF	5,7-6,0
MS	0,9-1,1
SVS	
A	
B	
Observations	

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 5,5p

1. Edition

En

Testoil-ISO 4113

VE 6/11 F 1100 R 181-2 Overflow temperature 45° C
0 460 416 050
DHK: 1 688 901 020

superseded
company: Fiat
engine: 8065.05.297

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	800	2,9-3,3 mm		
1.2 Supply-pump pressure	800	6,1-6,7 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	800	64,8-65,2 cm ³ /1000 strokes		max. 3,5
1.4 Idle regulation	400	16,0-20,0 cm ³ /1000 strokes		max. 3,5
1.5 Full-speed regulation	1200	17,0-23,0 cm ³ /1000 strokes		
1.6 Start	100	min. 100 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 0,6-1,4 (0,3-1,7)	800 (2,4-3,8)	1100 5,3-6,1 (5,0-6,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 5,1-5,7	1100 7,4-8,0	
Overflow delivery	n = rev/min cm ³ /10 s	500 42-83 (27-98)	1100 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1300 1240 1200 1150 1080 800 500	max. 2,5 1,5-8,5 (0,5-9,5) (15,5-24,5) 38,5-45,5 (37,5-46,5) 59,5-62,5 (58,3-63,7) (61,6-68,4) 59,0-62,0 (57,1-63,9)	
switch-off			
Idle stop	520 450 400	max. 2,5 3,0-9,0 (1,5-10,5) (13,5-22,5)	
End stop	150 250	min. 100,0 max. 60,0	
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,2-5,5
MS	1,5-1,7
SVS	5,2
A	
B	

Observations

24 V Pulling
electromagnet

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4.86

J10

J10

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 FIA 5,5p1
1. Edition

En

Testoil-ISO 4113

VE 6/11 F 1075 R 181-3 Overflow temperature 45° C
0 460 416 051
DHK: 1 688 901 020

Superseded by
company: Fiat
engine: 8065.05.295

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	800	2,6-3,0 mm		
1.2 Supply-pump pressure	800	5,9-6,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	800	66,0-67,0 cm ³ /1000 strokes		max. 3,5
1.4 Idle regulation	450	17,0-21,0 cm ³ /1000 strokes		max. 3,5
1.5 Full-speed regulation	1180	22,0-28,0 cm ³ /1000 strokes		
1.6 Start	100	min. 110,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 0,6-1,4 (0,3-1,7)	800 (2,1-3,5)	1000 3,6-4,4 (3,3-4,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 4,4-5,0		1000 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 42-83 (27-98)		1075 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	1260 1220 1180 1050 800 500	max. 2,5 5,0-12,0 (4,0-13,0) (20,5-29,5) 57,0-60,0 (55,8-61,2) (63,1-69,9) 70,5-73,5 (68,6-75,4)		K KF MS SVS A B
switch-off				
Idle stop	450 475 500	(14,5-23,5) 1,5-7,5 (0-9,0) max. 2,5		Observations
End stop	150 250	min. 110,0 max. 75,0		24 V Pulling electromagnet
2.4 Solenoid	cut-in voltage			

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 REN 2,0n

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2200 R 183

Overflow temperature 45° C

0 460 494 160

DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

supersedes

company:

engine:

Renault

J 85-814

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDI-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	4,0-4,4 mm	1,0	
1.2 Supply-pump pressure	1400	4,9-5,5 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	1400	49,0-50,0 cm ³ /1000 strokes	1,0	max. 2,0
Full-load delivery without charge-air pressure	600	22,5-23,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	400	4,0-8,0 cm ³ /1000 strokes	0	max. 2,5
1.5 Full-speed regulation	2400	23,0-29,0 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 60,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=1,0 bar	n = rev/min mm	1000 1,9-2,7(1,6-3,0)	1400 (3,5-4,9)	2000 6,2-7,0(5,9-7,3)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm ²)	400 1,8-2,4		2000 6,7-7,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		2200 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700	max. 2,0	1,0
	2500	max. 17,5	1,0
	2400	(22,0-30,0)	1,0
	2000	45,5-47,5 (44,2-48,8)	1,0
	1400	(47,2-51,8)	1,0
	1000	46,0-49,0 (45,2-49,8)	1,0
	700*	34,0-35,0 (31,5-37,5)	0,3
	600	(20,0-26,0)	0
switch-off			
Idle stop	375	10,0-16,0 (9,0-17,0)	
	400	(2,0-10,0)	
	500	max. 3,0	
	End stop	min. 40,0 max. 40,0	
2.4 Solenoid	cut-in voltage min 10 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	5,7-6,0
KF	3,2-3,4
MS	1,4-1,6
SVS	
A	
B	

Observations

* ALDA-stroke = 7,5 mm
Use adjusting nut
(46) to correct.

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 FIA 1,7 h3

2. Edition

En

Testoil-ISO 4113

VE 4/9 F 2300 R 207 Overflow temperature 45° C
 U 460 494 170
 DHK 1 688 901 022/130 bar
 Fuel injection test tubing 6x2x450 mm

supersedes 3.85
 company: Fiat
 engine: X 8/34

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,1-4,5 mm		
1.2 Supply pump pressure	1500	5,3-5,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	29,5-30,5 cm ³ /1000 strokes		2,5
1.4 Idle regulation	380	10,0-14,0 cm ³ /1000 strokes		2,5
1.5 Full-speed regulation	2450	19,0-25,0 cm ³ /1000 strokes		
1.6 Start	100	min. 55 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,6-2,4 (1,3-2,7)	1500 (3,6-5,0)	2300 7,0-7,8 (6,7-8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,1-3,7		2300 7,2-7,8
Overflow delivery	n = rev/min cm ³ /10 s	600 41-86 (26-98)		2300 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2900 2650 2450 2300 1500 1000 600	max. 1,5 2,0-9,0 (1,5-9,5) (18,0-26,0) 31,8-34,2 (30,8-35,2) (27,8-32,3) 29,8-32,2 (28,7-33,3) 30,0-33,0 (28,5-34,5)	
switch-off			
Idle stop	380 400 500	(8,0-16,0) 5,0-11,0 (4,0-12,0) max. 1,5	
End stop	300 400	min. 48 max. 45	
2.4 Solenoid	cut-in voltage min 10 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 FIA 1,3b

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2300 R 207-1 Overflow temperature 45° C

0 460 494 196
DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

 supersedes Fia-Regata
 company: X 8 / 34
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,1-4,5 mm		
1.2 Supply-pump pressure	1500	5,3-5,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	29,5-30,5 cm ³ /1000 strokes		max. 2,5
1.4 Idle regulation	380	10,0-14,0 cm ³ /1000 strokes		max. 2,5
1.5 Full-speed regulation	2450	19,0-25,0 cm ³ /1000 strokes		
1.6 Start	100	min. 55,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,6-2,4 (1,3-2,7)	1500 (3,6-5,0)	2300 7,0-7,8 (6,7-8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,1-3,7		2300 7,2-7,8
Overflow delivery	n = rev/min cm ³ /10 s	600 42-83 (27-98)		2300 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2900 2650 2450 2300 1500 1000 600	max. 1,5 2,0-9,0 (1,5-9,5) (18,0-26,0) 31,8-34,2 (30,7-35,3) (27,7-32,3) 29,8-32,2 (28,7-33,3) 30,0-33,0 (28,5-34,5)	
switch-off			
Idle stop	380 400 500	(8,0-16,0) 5,0-11,0 (4,0-12,0) max. 1,5	
End stop	300 400	min. 48 max. 45	
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12 V		

3. Dimensions

for assembly
and adjustment
mm

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,7-1,9
SVS	2,8
A	
B	
Observations	

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VW 1,6 x2

1. Edition

En

Testoil-ISO 4113

 VE 4/9 F 2250 R 211
 0 460 494 172

Overflow temperature 45° C

 supersedes
 company: VW
 engine: 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,8-4,2 m.n	0,75	
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	41,5-42,5 cm ³ /1000 strokes	0,75	max. 2,5
Full-load delivery without charge-air pressure	600	24,5-25,5 cm ³ /1000 strokes	0	
1.4 Idle regulation *	A 550	2,5-3,5 cm ³ /1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2525	13,0-19,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min. 35,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,75 bar	n = rev/min mm	1000 1,8-2,6 (1,5-2,9)	1500 (3,3-4,7)	1800 4,8-5,6 (4,5-5,9)	2250 6,1-6,9 (5,8-7,2)
2.2 Supply pump LDA = 0,75 bar	n = rev/min bar (kgf/cm ²)	600 2,3-2,9		2250 7,0-7,6	
Overflow delivery	n = rev/min cm ³ /10 s	600 (0 bar) 41-86 (26-98)		2250 (0,75 bar) 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700	max. 4,0	0,75
	2525	(12,0-20,0)	0,75
	2425	25,0-35,0 (26,0-34,0)	0,75
	2250	35,5-37,5 (34,2-38,8)	0,75
	1500	(39,7-44,3)	0,75
	1500	34,0-37,0 (33,2-37,8)	0
	1000**	34,5-35,5 (32,7-37,3)	0,30
	600	32,5-35,5 (31,0-37,0)	0,75
	600	(22,0-28,0)	0
switch-off			
electr.	70-400	0	
Idle stop	A 500	2,7-4,7	
	B 375	12,0-14,0 (9,0-17,0)	
	B 425	5,5-8,5 (3,0-11,0)	
	C 525	7,0-9,0	
End stop	150	min. 35,0	
	350	max. 30,0	
2.4 Solenoid	cut-in voltage	min 10 V	
		rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	K1
KF	5,7-6,0
MS	1,2-1,4
SVS	2,7
A	
B	
Observations:	
** LDA-stroke 16,0 mm	
Use adjusting nut	
(46) to correct.	
*Residual delivery	
setting idle setting	
(LFG) as per	
VDT-I-460/135	

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VW 1,3a

1. Edition

En

Testoil-ISO 4113

 VE 4/8 F 2450 L 212
 0 460 484 011

Overflow temperature 45° C

 superseded
 company: VW
 engine: 1,3 l

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting — mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,5-4,9 mm		max. 2,0
1.2 Supply-pump pressure	1500	5,4-6,0 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	—	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	24,5-25,5 cm ³ /1000 strokes		
1.4 Idle regulation	A 800	2,0-3,0 cm ³ /1000 strokes		
1.5 Full-speed regulation	2600	11,0-17,0 cm ³ /1000 strokes		
1.6 Start	100	min. 32,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	—			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,2-3,0 (1,9-3,3)	1500 (4,0-5,4)	2000 6,9-7,7 (6,6-8,0)	2450 8,6-9,4 (8,3-9,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,3-3,9		2450 7,7-8,3	
Overflow delivery	n = rev/min cm ³ /10 s	600 41-86 (26-98)		2450 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2850 2650 2600 2450 1500 600	max. 4,0 4,0-14,0 (5,0-13,0) (10,0-18,0) 20,0-22,0 (18,7-23,3) (22,7-27,3) 15,5-18,5 (14,0-20,0)	
switch-off			
electr.	70-400	0	
Idle stop	A 550 B 400 B 450	max. 5,4 11,0-13,0 (8,0-16,0) 5,5-8,5 (3,0-11,0)	
End stop	150 300	min. 25,0 max. 28,0	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12 V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	4,9
A	
B	

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 Vol 3,1a

1. Edition

En

Testoil-ISO 4113

VE 4/11 F 190 L 217 Overflow temperature 45° C
 0 460 414 027
 DHK 1 688 901 022
 Fuel injection test tubing 1 680 750 073

supersedes
 company Volvo
 engine: TAMD 31 95 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02(0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,3-4,7 mm	1,0	
1.2 Supply-pump pressure	1500	6,1-6,7 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	1500	93,5-94,5 cm ³ /1000 strokes	1,0	max. 5,0
Full-load delivery without charge-air pressure	650	58,0-59,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	23,0-27,0 cm ³ /1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2100	31,0-37,0 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 100,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1100	1500	1900
DA = 1,0 bar	mm	0,9-1,7(0,6-2,0)	(3,8-5,2)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	500	1900	
DA = 1,0 bar	bar (kgf/cm ²)	2,4-3,0	7,5-8,1	
Overflow delivery	n = rev/min	700 (0 bar)	1900 (1,0 bar)	
	cm ³ /10 s	41-86 (26-98)	55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2230	max. 3,0	1,0
	2100	(29,5-38,5)	1,0
	2050	62,0-71,0 (62,0-71,0)	1,0
	1900	83,0-86,0 (81,8-87,2)	1,0
	1500	(91,3-96,7)	1,0
	1200	96,2-98,8 (94,1-100,9)	1,0
	700	95,0-98,0 (93,1-99,9)	1,0
	800 *	83,5-84,5 (80,6-87,4)	0,3
	650	(55,1-61,9)	0
switch-off			
Idle stop	350	(20,5-29,5)	
	400	7,0-13,0 (5,5-14,5)	
	480	max. 3,0	
End stop	400	min. 74,0	
	500	max. 72,0	
2.4 Solenoid	cut-in voltage	min. 10 V	
		rated voltage 12 V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,5
MS	1,2-1,4
SYS	3,8
A	
B	

Observations

* LDA-stroke 6,4 mm
 Use adjusting nut
 (46) to correct.

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 4/11 F 1900 L 217-1 Overflow temperature 45° C
 0 460 414 028
 DHK 1 688 901 022
 Fuel injection test tubing 1 680 750 073

superseded
 company: Volvo
 engine: TAMD 31 95 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02(0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,3-4,7 min	1,0	
1.2 Supply-pump pressure	1500	6,1-6,7 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	1500	93,5-94,5 cm ³ /1000 strokes	1,0	max. 5,0
Full-load delivery without charge-air pressure	650	58,0-59,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	23,0-27,0 cm ³ /1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2100	31,0-37,0 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 100,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1100	1500	1900
LDA = 1,0 bar	mm	0,9-1,7(0,6-2,0)	(3,8-5,2)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	500	1900	
LDA = 1,0 bar	bar (kgf/cm ²)	2,4-3,0	7,5-8,1	
Overflow delivery	n = rev/min	700 (0 bar)	1900 (1,0 bar)	
	cm ³ /10 s	41-86(26-98)	55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2230	max. 3,0	1,0
	2100	(29,5-38,5)	1,0
	2050	62,0-71,0 (62,0-71,0)	1,0
	1900	83,0-86,0 (81,8-87,2)	1,0
	1500	(91,3-96,7)	1,0
	1200	96,2-98,8 (94,1-100,9)	1,0
	700	95,0-98,0 (93,1-99,9)	1,0
	800 *	83,5-84,5 (80,6-87,4)	0,3
	650	(55,1-61,9)	0
switch-off			
Idle stop	350	7,0-13,0 (20,5-29,5)	
	400	(5,5-14,5)	
	450	max. 3,0	
End stop	400	min. 74,0	
	500	max. 72,0	
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,5
MS	1,2-1,4
SVS	3,8
A	
B	
Observations	
pushing electromagnet	
24 V	
* LDA-stroke 6,4 mm	

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 4/11 F 1900 L 217-3 Overflow temperature 45° C
 0 460 414 032
 DHK 1 688 901 022
 Fuel injection test tubing 1 680 750 073

supersedes -
 company: Volvo
 engine: TMD 31 74 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02(0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,3-5,7 mm	0,8	
1.2 Supply-pump pressure	1500	5,8-6,4 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	70,0-71,0 cm ³ /1000 strokes	0,8	
Full-load delivery without charge-air pressure	700	53,0-54,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	18,0-22,0 cm ³ /1000 strokes	0	
1.5 Full-speed regulation	2150	12,0-18,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 90 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing				

2. Test Specifications checking values in brackets ()

2.1 Timing device LDA = 0,8 bar	n = rev/min mm	1000 1,5-2,3(1,2-2,6)	1500 (4,8-6,2)	1900 6,3-7,1(6,0-7,4)
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm ²)	500 2,2-2,8	1900 7,2-7,8	
Overflow delivery	n = rev/min cm ³ /10 s	700 (0 bar) 41-86(26-98)	1900 (0,8 bar) 55-138(40-153)	

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2220	max. 3,0	0,8
	2150	(10,5-19,5)	0,8
	2100	37,0-45,0 (36,5-45,5)	0,8
	1900	68,5-71,5 (67,7-72,7)	0,8
	1500	(67,8-73,2)	0,8
	700	66,5-69,5 (64,6-71,4)	0,8
	700 *	60,5-61,5 (57,6-64,4)	0,3
	700	(49,9-56,7)	0
switch-off			
Idle stop	350	(15,5-24,5)	
	400	4,5-10,5 (3,0-12,0)	
	450	max. 3,0	
End stop	400	min. 70,0	
	500	max. 65,0	
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12 V		

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,5
MS	1,2-1,4
SVS	3,8
A	
B	

Observations

* LDA-stroke 6,3 mm
 Use adjusting nut
 (46) to correct.

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 6/11 F 1900 L 218-2 Overflow temperature 45° C
 0 460 416 049
 DHK 1 688 901 022/130 bar
 Fuel injection test tubing 6x2x450 mm

supersedes Volvo-Penta
 company: TMD 41 110kW
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm $\pm 0,02(0,04)$

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1200	3,6-4,0 mm	0,8	
1.2 Supply-pump pressure	1200	6,2-6,8 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	71,0-72,0 cm ³ /1000 strokes	0,8	3,5(4,0)
Full-load delivery without charge-air pressure	700	56,0-57,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	18,0-22,0 cm ³ /1000 strokes	0	3,5(4,0)
1.5 Full-speed regulation	2050	17,0-23,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 85,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,8 bar	n = rev/min mm	700 0,5-1,3(0,2-1,6)	1200 (3,1-4,5)	1600 4,7-5,5(4,4-5,8)
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm ²)	500 3,5-4,1	1900 8,6-9,2	
Overflow delivery	n = rev/min cm ³ /10 s	700 (0 bar) 41-83(26-98)	1900 (0,8 bar) 55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2130	max. 3,0	0,8
	2050	(15,5-24,5)	0,8
	2000	39,5-46,5 (40,4-45,6)	0,8
	1900	69,0-72,0 (67,9-73,1)	0,8
	1500	(68,9-74,1)	0,8
	700	71,0-74,0 (69,1-75,9)	0,8
	700 *	61,0-62,0 (58,9-64,1)	0,3
	700	(53,9-59,1)	0
switch-off			
Idle stop	400	(15,5-24,5)	
End stop	450	max. 3,0	
	300	min. 85,0	
	500	max. 70,0	
2.4 Solenoid	cut-in voltage min. 10 Volt rated voltage 12 V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,2-5,5
MS	1,2-1,4
SVS	3,8
A	
B	
Observations	
* LDA-stroke 5,5 mm Use adjusting nut (46) to correct.	

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Test Specifications

Distributor-type

Fuel-injection Pumps

En

Testoil-ISO 4113

VE 6/11 F 1800 L 218-3 Overflow temperature 45° C

0 460 416 053

DHK 1 688 901 022

Fuel injection test tubing 1 688 750 073

supersedes

company: Volvo

engine: TD 41-91 kW

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1200	4,8- 5,2 mm	1,0	
1.2 Supply-pump pressure	1200	6,3- 6,9 bar (kgf/cm ²)	1,0	
1.3 Full-load delivery with charge-air pressure	1000	76,5-77,5 cm ³ /1000 strokes	1,0	max. 3,5
Full-load delivery without charge-air pressure	750	43,5-44,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	400	12,0-16,0 cm ³ /1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2000	15,0-21,0 cm ³ /1000 strokes	1,0	
1.6 Start	100	min. 90,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

	n = rev/min	700	1200	1500	1800
2.1 Timing device LDA=1,0 bar	mm	0,6-1,4 (0,3-1,7) (4,3-5,7) 6,2-6,8 (5,8-7,2) 6,2-7,0 (5,9-7,3)			
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgf/cm ²)	700 5,0-5,6	1500 7,0-7,6	1800 7,7-8,3	
Overflow delivery	n = rev/min cm ³ /10 s	700 (0bar) 41-86 (26-98)		1800 (1,0 bar) 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2050	max. 6,0	1,0
	2000	(13,5-22,5)	1,0
	1950	37,0-45,0 (36,5-45,5)	1,0
	1800	72,0-76,0 (71,3-76,7)	1,0
	1500	74,0-78,0 (73,3-78,7)	1,0
	1000	(74,3-79,7)	1,0
	750	69,5-72,5 (68,3-73,7)	1,0
	750 *	59,5-60,5 (57,3-62,7)	0,3
	750	(41,3-46,7)	0
switch-off			
Idle stop	400	(9,5-18,5)	
	450	3,0-3,0 (1,5-10,5)	
End stop	500	max. 3,0	
	400	min. 45,0	
	450	max. 50,0	
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,5
MS	0,9-1,1
SVS	5,5
A	
B	
Observations	
* LDA-stroke 6,2 mm Use adjusting nut (46) to correct.	
24 V Pulling electromagnet	

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VMA 1,5a
1. Edition

En

Testoil-ISO 4113

VE 3/10 F 2100 L 227
0 460 403 008

Overflow temperature 45° C

supersedes
company: Motori VM
engine: HR 392 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,4 mm $\pm 0,02(0,04)$

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,5- 4,9 mm	0,8	
1.2 Supply-pump pressure	1500	4,9- 5,5 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	57,0-58,0 cm ³ /1000 strokes	0,8	max. 3,0
Full-load delivery without charge-air pressure	500	43,5-45,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	425	9,5-13,5 cm ³ /1000 strokes	0	max. 3,0
1.5 Full-speed regulation	2330	22,0-29,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 40 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1500	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,8 bar	n = rev/min mm	1000 0,8-1,6(0,5-1,9)	1500 (4,0-5,4)	1900 6,9-7,7(6,6-8,0)	2100 6,9-7,7(6,6-8,0)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm ²)	600 1,7-2,3	2100 7,0-7,6		
Overflow delivery LDA=0,8 bar	n = rev/min cm ³ /10 s	500 41-86(26-98)	2100 55-138(40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450	max. 2,5	0,8
	2330	(21,0-30,0)	0,8
	2250	32,3-38,3 (30,8-39,8)	0,8
	2100	49,3-51,7 (47,8-53,2)	0,8
	1500	(54,8-60,2)	0,8
	750 *	52,0-53,0 (49,1-55,9)	0,3
	750	55,0-58,0 (53,1-59,9)	0,8
	750	48,0-49,0 (45,1-51,9)	0
	500	(41,1-47,9)	0
switch-off			
Idle stop	425	(7,0-16,0)	
	600	2,3- 8,3 (0,8- 9,8)	
	1200	max. 2,5	
End stop	350	min. 45,0	
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	mm
K	-
KF	5,7-6,0
MS	0,7-0,9
SVS	6,0
A	
B	
Observations	
* LDA-stroke 7,5 mm Use adjusting nut (46) to correct.	

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 13

3. Edition

En

PES 3 A 80 D 410/3 RS 1324

RSV 325-1250 A 8 C 2168-1 L

superseded 5.85

Komb.-Nr. 0 400 453 148

company KHD

engine F 3 L 912
45 kW/2500 min⁻¹
tractor DX 3,30

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0
(1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,7+0,1	5,6-5,7	0,25(0,35)			
325	8,3-8,5	1,0-1,6	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees 7			③ Torque control rev/min 10 11		
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11	
loose	800	0,3-0,7	-	-	-	ca. 19	325	7,9	1250	10,7-10,8	
	x = 4,0								500	11,2-11,3	
ca. 57	9,7	1290-1300					100	min. 19,5	800	11,2-11,4	
	4,0	1330-1360					325	8,3-8,5	1090	10,8-11,1	
②a	1565	0,3-1,4					450-510	= 2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		⑤ Idle stop rev/min 8		④a Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7					
1250	55,5-56,5 (54,0-58,0)	1290-1300	800	48,5-50,5 (46,5-52,5)		100	115,0-125,0 (112,0-128,0) = 19,5-21,0 mm RW	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

BOSCH

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Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 TAM 12,7 a

2. Edition

En

PE 8 A 95 D 410 LS 2451 RQV 300-1150 AB 1045-1 L
 1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
 Komb.-Nr. 0 400 648 143

supersedes 1.86

company: TAM

engine: F 8 L 413 F
173 kW/2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,3-9,4	8,6-8,8	0,3(0,6)			
300	5,9-6,1	1,4-2,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 16	100 300	min.7,5 5,9-6,1	200 600 850 1200	0,7-0,9 3,9-4,1 6,9-7,1 8,4
ca. 46	8,3 4,0 1350	1190-1200 1225-1255 0-1,0				330-445				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	86,0-88,0 (84,0-90,0)	1190-1200*	1000	86,5-89,5 (84,5-91,5)	100	116,5-126,5 (113,5-129,5)	1150 500 765 820	9,3+0,1 9,7+0,1 9,5+0,2 9,4+0,2
			700	86,5-89,5 (84,5-91,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 9,2 f 2

1. Edition

En

PES 5 A 95 D 320 LS 2504

RQV 250-1100 AB 978 DR

superseded

company: MAN

Komb.-Nr. 0 400 845 037

engine: D 2565 MUL

1-3-5-4-2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 141 kW/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{1,5-1,6}{(1,45-1,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	11,4-11,6	0,3 (0,6)			
250	6,4-6,6	1,5-2,1	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	14,4-17,6	-	-	-	ca. 13	100	min. 7,2	200	0,7-0,9
							250	5,6-5,8	500	3,4-3,7
							315-375	= 2,0	800	4,8-5,2
							450	max. 1,0	1100	7,3
ca. 42	10,3 4,0 1300	1140-1150 1175-1205 0 - 1,0				③a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	114,0-116,0 (112,0-118,0)	1140-1150 *	800	111,0-115,0 (109,0-117,0)	100	13,7-14,3 mm RW	1100	11,3+0,1
			500	108,5-112,5 (106,5-114,5)	250	15,0-21,0 = 6,5 mm	800	11,5+0,2
							500	11,8+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.06

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 c 4

En 2. Edition

PES 4 A 80 D 410/3 RS 2523

RSV 325-1400 A 8 C 1022 L

supersedes 1.85

Komb.-Nr. 0 400 864 046

company KHD

engine F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,9-2,0}{(1,85-2,05)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,2+0,1	5,7-5,8	0,2 (0,35)			
325	8,0-8,2	0,9-1,5	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

Testoil ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	325	7,6	1400	10,2-10,3
	x = 3,5						100	min. 19,5	900	10,8-11,1
							325	8,0-8,2	500	11,4-11,5
ca. 69	9,2	1440-1450					670-730	= 2,0		
2a	4,0	1470-1500								
	1600	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop ^z		6 Rotational-speed limit ^z		3a Fuel delivery characteristics		Starting fuel delivery idle 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	57,0-58,0 (55,5-59,5)	1440-1450*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

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K2

K2

Test Specifications

Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 m

8. Edition

En

Testoil-ISO 4113

PE 6 A 85 D 320 RS 2546 RSV 250-750 A 7 B 2125 R
 Komb.-Nr. 0 400 676 168
 Values apply to fuel-injection test tubing
 1 680 750 015

superseded 2.84
 company DAF
 engine: DD 575 DF

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,15-2,25 \\ (2,10-2,30) \end{matrix}$ mm (from BDC) ; RW = 9,0

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
750	12,1+0,1	6,2 - 6,4	0,3(0,45)			
250	8,4-8,6	0,9 - 1,5	0,25(0,45)			
Port closing difference between control-rod travel 9 mm and max. 3 - 4° camshaft						

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 15	250	8,5	-	-
	x =	4,5					250	8,4-8,6		
							260-320	2,0		
⑤ ca. 40	11,1	770-780						**		
	4,0	78,5-805								
	955	0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel,
 The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
750	61,5 - 63,5 (59,5 - 65,5)	770-780*	-	-	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 i 1

5. Edition

En

PE 6 A 90 D 320 RS 2547 RSV 250-1200 A5B 779 R

Komb.-Nr. 0 400 676 141

0 400 676 153

Values apply to fuel-injection test tubing

1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

superseded 2.84

company: DAF

engine: DT 615

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,2-2,3$ (2,15-2,35) mm (from BDC) ; RW = 9,0 Difference between CRT9 + 21 2,5-3,5°

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	10,8+0,1	7,1 - 7,2	0,3(0,45)			
250	5,9-6,1	0,9 - 1,3	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 15	250	5,5	1000	10,8+0,1
	x = 3,25						250	5,9-6,1	300	11,2+0,5
							330-390=2.0		400	11,0+0,2
⑤ ca. 51	9,8	1240-1250								
	4,0	1280-1310								
	1450	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes*	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
LDA 1000	0,7 bar 71,0-72,0 (69,0-74,0)	1240-1250*	600	0 bar 51,5 - 53,5 (49,5 - 55,5)	100	133,0-143,0 = 19,5 - 21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing pressure - in bar gauge pressure

DAF 6,2 i 1 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
.. RS 2547 + RSV .. A5B 779 R	0,7 bar	0,25 0,21 0	10,8 - 10,9 10,6 - 10,7 10,1 - 10,4 9,8 - 10,0

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 6,2 n
6. Edition

En

PE 6 A 90 D 320 RS 2577

RSV 250-750 A 7 B 2125 R

supersedes 10.84
company DAF
engine DT 615

Komb.-Nr. 0 400 676 167

Values apply to fuel-injection test tubing

1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

RW = 9,0 mm

Port closing at prestroke (2,15-2,35)
2,20-2,30

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,0+0,1	7,5 - 7,7	0,4 (0,55)			
250	5,9-6,1	0,8 - 1,4	0,2(0,4)			

Port closing difference between control-rod travel 9 mm and max. 2,5-3,5° camshaft

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Control lever deflection in degrees rev/min Control rod travel mm			3 Torque control rev/min Control rod travel mm	
2	3		4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 15	250	6,0	-	-
	X =	5,0					100	min. 19,5		
ca. 40	10,0	770-780					250	5,9-6,1		
2a	4,0	785-805					260-320	= 2,0		
	955	0,3-1,7						**		

** Set idle-speed auxiliary spring at 2 mm control-rod travel, The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limit Note: changed to ... rev/min		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes		Starting fuel delivery Idle rev/min cm ³ /1000 strokes		4a Idle stop rev/min Control rod travel mm	
1	2	3	4	5	6	7	8	9	
750	75,0-77,0 (73,0-79,0)	760-770*	-	-	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

K6

K6

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 15,0 d 1

2. Edition

En

PE 10 A 95 D 520/5 LS 2604 RQV 250-1150 AB 1189 R

supersedes 9.83

company: MAN

engine: D 2840 ME

Komb.-Nr. 0 400 649 240

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315⁰ ± 0,5⁰ (± 0,75⁰)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8
(1,65 - 1,85) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,0+0,1	12,8-13,0	0,35(0,6)			
250	6,9-7,1	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 12	250	6,9-7,1	350	2,0-2,5
ca. 62	12,0 4,0 1400	1190-1200 1280-1310 0 - 1,0					400-460=2,0		850 1150 1300	5,8-6,0 7,5-7,9 9,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑧		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	128,0-130,0 (122,5-128,5)	1190-1200*	-	-	100	15,9-16,5 mm RW	1150 500 1010 1080	13,0+0,1 13,5+0,1 13,4+0,2 13,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 9,6 i 1

4. Edition

En

PE 6 A 95 D 410 LS 2621 RQV 300-1250 AB 1195 L
Komb.-Nr. 0 400 646 271

1- 6- 5 - 4 - 3 - 2

0-75-120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes 9.85

company: KHD

engine: F 6 L 413 F
141 kW / 2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC)
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,4+0,1	9,2 - 9,4	0,35(0,6)			
300	6,4-6,6	0,8 - 1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1375	15,2-17,8	-	-	-	ca. 18	100	min.8,0	300	1,2-1,3
ca. 51	9,4	1290-1300					300	6,5-6,7	500	2,6-2,9
	4,5	1365-1395							1000	5,4-5,6
	1500	0 - 1,0				375-485			1300	7,7-7,8
						③a			1380	8,7

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1250	91,5 - 93,5 (89,5 - 95,5)	1290-1300 *	750	93,0-96,0 (90,5-98,5)	100	116,5-126,5 (113,5-129,5)	1250	10,4+0,1
							500	10,9+0,1
							850	10,7+0,2
							950	10,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 LIE 5,6 a

3. Edition

En

PES 4 A 95 D 410 RS 2685

RSV 400-1000 A 1 C 2187 L

supersedes 10.85

company Liebherr

engine D 904 NA

70 kW

Komb.-Nr. 0 400 874 238

Values apply to fuel-injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,7-2,8}{(2,65-2,85)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,7-9,8	7,9-8,1	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	400	5,7	1000	9,7-9,8
	$x = 2,5$						100	min. 19,5	550	9,7-9,9
							400	6,1-6,3	430	10,9-11,5
							455-515	2,0		
ca. 50	8,7	1040-1050								
	4,0	1065-1095								
2a	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1000	79,0-81,0 (77,0-83,0)	1040-1050*	600	69,0-72,0 (66,5-74,5)	100	120,0-130,0 (117,0-133,0) = 19,5-21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

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Testoil-ISO 4113

K9

K9

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 LIE 5,6 b

3. Edition

En

PES 4 A 100 D 410 RS 2686 RQV 400-1000 AB 1203 L

Komb.-Nr. 0 400 844 085

Values apply to fuel-injection test tubing,
1 680 750 008supersedes 10,85
company: Liebherr
engine: D 904 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,7-2,8}
(2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35(0,6)			
400	5,9-6,1	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 11	100 400	min. 7,5 5,9-6,1	375 600 1000 1150	1,0-1,1 3,7-4,0 7,5-7,6 9,9
ca. 62	10,4 4,0 1250	1040-1050 1105-1135 0 - 1,0				420-530 (3a)				

Torque control travel a = 1,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 119,0-121,0 (117,0-123,0)	1040-1050*	LDA 700	0,7 bar 128,5-131,5 (126,0-134,0)	100	19,5-21,0 mm RW	1000 500 900 700	11,4+0,1 12,8+0,1 11,7+0,2 12,5+0,2
			LDA 500	0 bar 87,5-90,5 (85,5-92,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

LIE 5,6 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference mm (1)
PES 4 A .. RS 2686 +RQV .. AB 1203 L	0,70	0 0,40 0,33	12,8-12,9 10,4-10,5 11,8-11,9 10,6-10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 LIE 8,4 b

2. Edition

En

PES 6 A 100 D 410 RS 2687 RQV 400-1000 AB 1203 L

Komb.-Nr. 0 400 846 536

Values apply to fuel-injection test tubing

1 680 750 008

supersedes 9.85

company: Liebherr

engine: D 906 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,7-2,8}
(2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	10,5-10,7	0,35(0,6)			
400	6,3-6,5	1,0-1,6	0,35(0,55)			
Port closing difference between control-rod travel 12,0 mm and max. 4-5° camshaft						

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 14	100 400	min. 7,9 6,3-6,5	375 600 1000 1150	1,0-1,1 3,7-4,0 7,5-7,6 9,9
ca. 62	10,3 4,0 1250	1040-1050 1105-1135 0-1,0				420-530 (3a)				

Torque control travel a = 1,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 105,0-107,0 (103,0-109,0)	1040-1050*	LDA 700	0,7 bar 118,5-121,5 (116,0-124,0)	100	105,0-115,0 (102,0-118,0) =19,5-21,0 mm RW	1000 500 900	11,4+0,1 12,8+0,1 11,8+0,2
			LDA 500	0 bar 87,5-90,5 (85,5-92,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

LIE 8,4 b

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2687 +RQV..AB 1203 L	0,70	0 0,40 0,37	12,8-12,9 11,3-11,4 12,4-12,5 11,6-11,8

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 LIE 8,4 a

3. Edition

En

PES 6 A 95 D 410 RS 2689 RSV 400-1000 A 1 C 2187 L
Komb.-Nr. 0 400 876 322

supersedes 10.85
company Liebherr
engine D 906 NA
150 kW

Values apply to fuel-injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,7-2,8) mm (from BDC)
(2,65-2,85)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,7-9,8	8,1-8,3	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	400	5,7	1000	9,7-9,8
	x = 2,5						100	min. 19,5	550	9,7-9,9
							400	6,1-6,3	430	10,9-11,5
							455-515	= 2,0		
ca. 50	8,7	1040-1050								
2a	4,0	1065-1095								
	1230	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1000	81,0-83,0 (79,0-85,0)	1040-1050*		600	70,0-73,0 (67,5-75,5)	100	120,0-130,0 (117,0-133,0)	0 - 0	-
						400	10,0-16,0 (7,5-18,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

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4.86

K14

K14

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 6,2 o 1

2. Edition

En

PES 6 A 95 D 320 RS 2693 Z
Komb.-Nr. 0 400 876 333

RSV 300-1300 AOC 2195 R

supersedes 10.85
company: DAF
engine: DNT 620

Values apply to fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0 - 2,1$; RW = 7,5 - 10,5 mm
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,2+0,1	8,7-8,9	0,35 (0,6)			
300	6,1-6,3	0,6-1,2	0,35(0,55)			

Port closing difference between control-rod travel 9 mm and max. 2,5 - 3,5 ° camshaft

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7				ca. 27	300	5,7	1290	11,6-11,8
	x = 5,5								500	12,2-12,3
ca. 58	10,6	1340-1350					100	min. 19,5	1020	11,9-12,1
2a	4,0	1430-1460					300	6,1-6,3		
	1595	0,3-1,4					570-630	2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle		Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
LDA 850	0,7 bar 87,0-89,0 (85,0-91,0)		LDA 1290	0,7 bar 85,0-87,0 (82,5-89,5)		100	125,0-135,0 (122,0-138,0)	-	-
			LDA 600	0 bar 65,0-67,0 (63,0-69,0)		300	6,0-12,0 (3,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

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K15

K15

D. Adjustment Test for Manifold Pressure Compensator

DAF 6,2 o 1

- 2 -

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2693 Z + AOC 2195 R	0,70	0 0,29 0,25	12,2-12,3 11,2-11,4 12,0-12,1 11,5-11,7

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,2 a

40

2. Edition

En

PE 8 AM 90 D 321 RS 2014 RQV 275-1500 AB 837 R

Komb.-Nr. 0 405 058 201

supersedes 6.85

company: RVI

engine: HS 115

191 KW

1-8-7-3-6-5-4-2 je 45 ° ± 0,5 ° (± 0,75 °)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$ mm (from BDC) Port closing mark cyl.7
 $(2,10-2,30)$

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	10,2±0,1	8,7-8,8	0,3(0,45)			
275	6,6-6,8	1,6-2,0	0,45(0,65)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1650	15,2-17,8	-	-	-	ca. 12	100	min. 8,2	275	0,5-0,7
ca. 66	9,2	1595-1605					275	6,6-6,8	415	2,0-2,2
	4,0	1660-1690							800	3,9-4,1
						325-390			1100	5,5-5,7
						③a			1490	8,6

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	87,0-88,0 (85,0-90,0)	1595-1605 *	-	-	100	158,0-168,0 (155,0-171,0) = 17,5-17,9 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.86

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K17

KAT

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004
RQV 300...1150 MW 8/2 R

1- 5- 3- 6- 2- 4
0-60-120-180-240-300 $\pm 0,5^\circ$ (0,75°)

supersedes 4.85
company: Volvo
engine: TD 60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,80-2,90}
(2,75-2,95) mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5+0,1	9,4-9,6	0,35(0,6)			
300	5,2-5,4	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150 1400	15,2-17,8 0-1,0	-	-	-	ca. 11	100 300 370-430	min.7,0 5,2-5,4 =2,0	300 800 1190	1,1-1,2 4,3-4,6 9,2
ca. 50	10,5 4,0	1190-1200 1235-1265								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤ Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1000	94,0-96,0 (92,0-98,0)	1190-1200*			100 300	20-21 mm RW 120,0-130,0 (117,0-133,0) 9,5-13,5 (7,0-16,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

Testo-ISO 4113

PES 6 MW 100/320 RS 1016
RQV 300 - 1400 MW 25-1
Komb. 0 403 446 122
1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 12.85

company: RVI

engine: MIDR 06.02-12
125 kW (170 PS)

* Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,95-3,15)

Port closing at prestroke

3,00-3,10

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1±0,1	9,1-9,3	0,35(0,6)			
300	6,2-6,3	0,95-1,35	0,35(0,55)			
900	11,1±0,1		0,5(0,7)			
500	9,8-9,9					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400 1650	15,2-17,8 0-1,0				ca. 12	200 300	max. 7,5 5,8-5,9		
ca. 62	10,1 4,0	1455-1465 1575-1605				③a	490-550 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1400	0,5 bar 91,5-93,5 (89,5-95,5)	1455-1465*	LDA 900	0,5 bar 87,5-91,5 (85,5-93,5)	100	91,5-93,5 (89,5-95,5)		
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	300	9,5-13,5 (7,0-16,0)		
					100-230 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

RVI 8,8k 2

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1016 mit MW 25-1	0,23	0,5 0,2 0	10,7-10,9 11,1-11,2 10,2-10,3 9,7-9,8

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 f

5. Edition

En

Testoil-ISO 4113

 PES 6 MW 100/320 RS 1016
 0 403 446 129

RQV 300-1400 MW 25-2

supersedes 10.84

company: RVI

 engine: MIDR 06.02-12
 125 kW (170 PS)

 1- 5- 3 - 6 - 2 - 4
 0-60-120-180-240-300

* Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{3,00-3,10}{(2,95-3,15)}$ mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1-9,3	0,35(0,6)			
300	5,8-5,9	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5 (0,7)			
500	9,4+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1400 1700	15,2-17,8 0- 1,0	-	-	-	ca. 13	300 200	5,8-5,9 max.7,5	200 300	0,8 1,4
ca. 62	10,1 4,0	1455-1465 1575-1605				③a	490-550 = 2,0		600 1000 1200 1400	4,1 5,7 6,8 8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,7 bar 91,0-93,0 (89,0-95,0)	1455-1465*	LDA 900	0,7 bar 86,0-90,0 (84,0-92,0)	100	94,0-104,0 (91,0-107,0)		
			LDA 500	0 bar 52,0-54,0 50,0-56,0	300	9,5-13,5 (7,0-16,0)		
					100-230	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

RVI 8,8 f

-2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1016 mit RQV...MW 25-2	0,12	0,16 0 0,7	9,9-10,0 10,7-10,8 9,4- 9,5 11,1-11,2

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 6,1 h

2. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119
RQV 300-1400 MW 57
0 403 446 152

supersedes 10.85
company: Volvo
engine: TD 61.3012
132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,20-3,30}{(3,15-3,35)}$ mm (from BDC) 9-12 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,6+0,1	9,0-9,2	0,35 (0,6)			
300	6,9-7,0	1,6-2,0	0,35 (0,5)			
1000	10,3+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1480 1725	15,2-17,8 0-1,0				ca. 16	300 100	6,9-7,0 min.8,5		
ca. 62	10,6 4,0	1440-1450 1595-1625				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 90,0-92,0 (88,0-94,0)	1440-1450*	LDA 1000	0 bar 75,0-77,0 (73,0-79,0)	100 300	140-160 (137-163) 16,0-20,0 (13,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing pressure - in bar gauge pressure
increasing

VOL 6,1 h -2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1119 with MW 57	0,20	0,30 0,70 0	10,5-10,6 11,2-11,5 11,6-11,7 10,3-10,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119-1
RQV 300-1400 MW 57-1
0 403 446 153

supersedes 10.85
Volvo
company TD 61.3012
engine: 150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30
(3,15-3,35) mm (from BDC) 9,0-12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	10,4-10,6	0,35(0,6)			
300	6,3-6,4	1,6-2,0	0,35(0,55)			
1000	10,1+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1480 1700	15,2-17,8 0-1,0				ca. 13	300 100	6,3-6,4 min.7,9		
ca. 61	11,0 4,0	1440-1450 1590-1620				③				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min
1	2	3	4	5	6	7	8
LDA 1000	0,7 bar 104,0-106,0 (103,0-109,0)	1440-1450*	LDA 1000	0 bar 75,0-77,0 (73,0-79,0)	100 300	140,0-160,0 (137,0-163,0) 16,0-20,0 (13,5-22,5)	

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing pressure – in bar gauge pressure
increasing

VOL 6,1 g -2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1119-1 with RQV..MW 57-1	0,28	0,15 0 0,7	11,5-11,8 10,5-10,6 10,1-10,2 12,0-12,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7a17

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/720 RS 1125
RSV 300-1300 MWO A 317
0 403 476 028

supersedes: -
company: Daimler-Benz
engine: OM 362 LA
141 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Values apply to fuel-injection test tubing
1 680 750 008

Port closing at prestroke $3,20-3,30$
 $(3,15-3,35)$ mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1280	11,8+0,1	9,2-9,4	0,35(0,6)			
300	5,9-6,0	1,2-1,6	0,35(0,5)			
800	11,8+0,1		0,5(0,7)			
500	9,7-9,8					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
100se	800	0,3-1,0				ca. 16	300	5,9-6,0		
							100	min.19,0		
ca.59	1330-1340 = 10,8 1400-1430 = 4,0 1560 = 0,3-1,7									
②a										

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel,

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
LDA 1280	0,9 bar 92,0-94,0 (90,0-96,0)		LDA 800	0,9 bar 92,0-94,0 (89,0-97,0)		100	80,0-90,0 (77,0-93,0)		
			LDA 500	0 bar 50,0-52,0 (48,0-54,0)		300	12,0-16,0 (11,0-17,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts.

12.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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L3

L3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

MB 5,7a17 -2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1125 mit RSV..A 317	0,45	0 0,35 0,90	11,4-11,6 9,7-9,8 10,5-10,7 11,8-11,9

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 10,8 t

5. Edition.

En

PE 6 P 100/720 RS 15

(A)

RS 15 Z

RQ 250/1100 PA 66D (1)
RQ 250/1100 PA 50 D (2)
EP/RSV250-900P1/303 (3-4)
EP/RSV300-1100P1/303 (5)

supersedes 5.72
company: Daimler-Benz
engine: OM 346
(192 PS - 1)
(230 PS - 2)
(165 PS - 3)
(175 PS - 4)
(OM 346/355 - 5*)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	9,3 - 10,3	0,4			
1000	6 9	2,6 - 3,4 5,9 - 6,7				
200	9	2,5 - 3,3				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

RQ.. PA 66D (1)

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 6		Idle speed regulation Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
1050	14,4-15	1050	14,7	1100	14,4-14,7	1150	10,0-13,5	1200	3,0- 5,0	1260	0	200	6,6-7,2	300	4,5-5,5	400	0,8-2,5	470	0	450	15,9-16,6
																		700	15,3-15,6	940	14,7-14,8

Torque-control travel
on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
1090	93,5 - 95,0	500		900	91,5 - 94,0	100	14 - 17		
				600	96,5 - 99,0				
				450	89,5 - 92,5				
When checking (column 2 and 5) increase by ± 0.4 cm ³ /100h									

Checking values in brackets

B. Governor Settings

RQ .. 250/1100 PA 50D (2)

(2)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1050	14,7-15,3	1050	15,0	1100	14,9-15,0	560	0	150	7,0-8,0	700	15,9-16,0
				1120	14,3-15,0			200	6,6-7,6		
				1150	9,8-13,3			300	4,5-5,5	950	15,0-15,3
				1200	3,0- 5,0			400	0,7-2,5		
				1260	0			460	0		

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min		rev/min	cm ³ /- 1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
Pump .. S15 with governor RQ..PA 50 D (2)							
1090	123,5 - 126,5			900	125,0 - 129,0	100	18 - 20,5
				700	122,5 - 126,5		
				450	116,5 - 121,5		

Checking values in brackets

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min		rev/min	cm ³ /- 1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7

En Checking values in brackets

B. Governor Settings

EP/RSV .. 250-900 P1/303 (3-4)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 46	900 950 980	16,0 9,5 4,5	without auxiliary spring			ca. 21	250	6,0	880	0
②a	950 1000 1080	8,2-10,8 2,0- 4,0 0-1				with auxiliary spring	100 250 350 460	19 - 21 5,7-6,3 1,7-3,8 0-1	450 300	0 1,2 - 1,8

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Pump output 165 bhp)	.. S15 with governor 250-900 P1/303 (3 - Continuous								
880	93,0 - 96,0	910 (EP/RSV)			(4 - Special output 175 bhp)				
880	99,0 - 102,0	910 (EP/RSV)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

EP/RSV .. 300-1100 P1/303 (5)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 58	1100 1140 1180	16,0 12,0 7,0	without auxiliary spring			ca. 23	300	7,5	1080	0
②a	1150 1200 1340	10,0-12,0 3,8- 4,2 0-1				with auxiliary spring	200 300 400 550	19 - 21 7,2-7,8 3,3-4,2 0-1	500 350	0 1,2-1,8

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Pump .. S152 with governor 300-1100 P1/303 (5 - variable for 346/355*)					1020 (EP/RSV)				
approx. 10 mm control-rod travel									
*(Full load - and possibly speed limitation - is stamped onto the nameplate of the governor!)									

Checking values in brackets
En

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 13,8 b 2

1. Edition

En

PE 6 P 100 A 420 LS 89

RSV 250-1000 P 7/304 R

Komb.-Nr. 0 401 876 099

Note VDT-I-401/103

supersedes

KHD

company F 6 M 716

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	14,9+0,1	15,2-15,4	0,35(0,6)			
250	8,9-9,1	1,8-2,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 25	250	8,5	-	-
	X = 5,0						250	8,9-9,1		
ca. 68	13,9	1040-1050					530-590	2,0		
2a	4,0	1145-1175								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)		characteristics		Idle		Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5		6	7	8	9
Take from VDT-I-401/103		1040-1050*	-	-		-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.86

BOSCH

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Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps ②

and Governors

WPP 001/4 FIA 13,8 a
9. Edition

En

PE 6 P 120 A 720 RS 167 RQ 225/1100 PA 118 R
Komb.-Nr. 0 401 846 225
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 3.83
company: Fiat
engine: 221 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0-2,1 \\ (1,95-2,15) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	17,0-17,3	0,5(0,9)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,1 4,0 1350	1145-1160 1190-1220 0-1,0	225	7,6	100 225 365-405 = 2,0	min. 9,1 7,5-7,7	1100 600	11,1-11,2 11,1-11,3

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /~1000 strokes 2	rev/min 3	rev/min 4	cm ³ /~1000 strokes 5	rev/min 6	Control rod travel 7
1100	170,0-173,0 (167,0-176,0)	-	-	-	100	19,0-21,0

Checking values in brackets

7.83

Test Specifications

Fuel Injection Pumps ②

and Governors

PE 6 P 120 A 720 RS 167 Z RQ 225/1100 PA 118 R
 Komb.-Nr. 0 401 846 345
 Values only apply to test nozzle-and-holder assembly
 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 3.83
 company: Fiat
 engine: 221 A
 210 kW (286 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,0-2,1}
 (1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,3+0,1	16,3-16,6	0,5(0,9)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	15,6-16,4	550	16,0	9,3 4,0 1300	1145-1160 1185-1215 0-1,0	225	7,6	100 225 365-405 = 2,0	min. 9,1 7,5-7,7	1100 550	10,3-10,4 10,3-10,5

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		3a		3b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min		rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel
1	2	3		4	5	6	7
1100	163,0-166,0 (160,0-169,0)	-		-	-	100	19,0-21,0

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 c 7

2. Edition

En

PE 8 P 130 A 920/5 RS 293-1 RSUV 300-1000 P 0 A 352

1- 6- 4- 5 - 8 - 3 - 2 - 7

0-75-90-120-210-225-315-345° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 6.85
KHD

company BA 16 M 816

engine:
Komb.-Nr. 0 401 378 115

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees 7		rev/min 8		3 Torque control Control rod travel mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3							Control rod travel mm 9			
loose	800	0,3-1,0	-	-	-	ca.22		300	5,7	1000	13,5-13,6
	x = 2,0							300	6,1-6,3	280	14,7-15,3
								325-385	=2,0	450	13,5-13,6
ca.66	12,5	1040-1050									
2a	4,0	1060-1090									
	1225	0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 8 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
Test specifications on request. Pumps operates in tandem.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 30,4 k 2

En

1. Edition

PE 12 P 130 A 920 RS 294-1 RSUV 300-1000 POA 348 R
Komb.-Nr. 0 401 870 078
1-10-5-7-2-11-6-8-3-12-4-9 je $30^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke 2,0-2,1 mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			③ Torque control rev/min mm 10 11	
loose	Control rod travel mm 2	Control rod travel mm rev/min 3	-	-	-	ca. 22	300	5,7	1000	13,5-13,6
	x = 4,0						300	6,1-6,3		
ca. 66 ②a	12,5	1040-1050					330-390	= 2,0	280 450	14,7-15,3 13,5-13,6
	4,0	1065-1095								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note: changed to ... rev/min 3		③a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		④a Idle stop rev/min Control rod travel mm 8 9	
Test specifications on request.		1040-1050*		-		-		-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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L12

L12

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 k 3

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RSUV 300-750 P9A 350 R
Komb.-Nr. 0 401 870 077
1-10-5-7-2-11-6-8-3-12-4-9 je $30^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
company KHD
engine BA 12 M 816

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	300	5,7	-	-
	x = 4,0									
ca. 62	12,5	790-800					300	6,1-6,3		
2a	4,0	815-845					330-390	= 2,0		
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Test specifications on request.		790-800*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

L13

L13

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 k 4

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RSUV 300-1000 POA 352

Komb.-Nr. 0 401 870 078

1-10-5-7-2-11-6-8-3-12-4-9 je $30^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company KHD

engine BA 12 M 816

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees 7			③ Torque control Control rod travel mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,7	1000	13,5-13,6
	x = 2,0								280	14,7-15,3
ca. 66	12,5	1040-1050					300	6,1-6,3	450	13,5-13,6
	4,0	1060-1090					325-385	= 2,0		
②a	1225	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note: changed to ... rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		⑤ ④a Idle stop Control rod travel mm 8 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050 *	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 1

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RS 250/1000 P1A 422 R
Komb.-Nr. 0 401 870 075
1-10-5-7-2-11-6-8-3-12-4-9 je $30^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company KHD
engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	6,2-6,4	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 23	250	6,2	1000	13,5-13,6
	x = 5,0								400	14,7-15,3
VH ca. 57	12,5	1040-1050					250	6,1-6,3	550	13,5-13,6
FH max.	4,0	1095-1125				150-200	400-460	= 2,0		
2a	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9	
1	2								
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

L15

L15

Test Specifications Fuel Injection Pumps (1A) and Governors

40
WPP 001/4 KHD 15,2 b 2
1. Edition

En

PE 6 P 120 A 420 LS 324 RSV 250-1000 P 7/304 R

Komb.-Nr. 0 401 876 202

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
company
engine
KHD
BA 6 M 816

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29,3-30,1)	0,5(0,9)			
250	6,0-6,2	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
Loose	800	0,3-0,7	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5,5						250	6,0-6,2	300	16,2-16,8
							345-405	5=2,0	450	14,9-15,0
ca. 67	13,9	1040-1050								
②a	4,0	1080-1110								
	1250	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Test specifications on request.		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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L16

L16

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 f

1. Edition

En

PE 6 P 130 A 420 LS 324-1 RSV 250-1000 P7A 304

supersedes

company

KHD

engine

BA6 M 816

Komb.-Nr. 0 401 876 281

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) ; RW = 9,0-12,0 mm
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,4-36,4)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7 x = 5,0	-	-	-	ca.22	250	5,7	1000	13,5-13,6
ca.64	12,5	1040-1050					250	6,1-6,3	300	14,7-15,3
2a	4,0	1065-1095					330-390	=2,0	450	13,5-13,6
	1225	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 c1

1. Edition

En

PE 6 P 130 A 420 LS 324-1 RS 250/1000 P 1 A 422 R

Komb.-Nr. 0 401 876 280

supersedes -

company: KHD

engine: BA 6 M 816

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$
(1,95-2,15) mm (from BDP) RW= 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	FHca.23	250	6,2	1000	13,5-13,6
	x = 5,0						400-460	2,0	400	14,7-15,3
									550	13,5-13,6
VHca.57 FH full	12,5	1040-1050				150-200				
2a	4,0	1095-1125								
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
Test specifications on request.		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 20,2 a

1. Edition

En

PE 8 P 120 A 620/4 LS 325 RSUV 250-600 P 8 A 321 R

1-4-7-6-8-5-2-3 je 45° ± 0,50 (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company: KHD

BA 8 M 816

engine Komb.-Nr. 0 401 878 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	14,9+0,1	28,7-29,1 (28,4-29,4)	0,5(0,9)			
250	6,0-6,2	1,6-2,3 (1,3-2,6)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	775	0,3-1,0	-	-	-	ca. 25	250	5,5	600	14,9-15,0
	X = 4,0						250	6,0-6,2	220	16,2-16,8
							260-320	= 2,0	350	14,9-15,0
ca. 65	13,9	640-650								
2a	4,0	660-690								
	800	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Not known.		640-650 *	-	-	-	100	19,5-21,0 mm RW	-	-
Adjust according to the engine records.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

PE 6 P 120 A 321 RS 438 RQV 275-1200 PA 648

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 1.83

company: RVI

MID 062045

engine:

Komb.-Nr. 0 401 856 153

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6}
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,2+0,1	13,4-13,7	0,5(0,9)			
275	5,9 - 6,1	0,7-1,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	250	0-0,9
ca. 65	10,2	1240-1250					275	5,9-6,1	570	4,7-5,0
	4,0	1335-1365							880	6,1-6,3
	1500	0-1,0				270-365			1200	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	134,0-137,0 (131,0-140,0)	1240-1250*	-	-	100	180,0-200,0	-	-
					275	7,0-13,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 10,6 a

2. Edition

En

PES 4 P 120 A 320 RS 451

RQV 350-900 PA 618

supersedes 1.83

Komb.-Nr. 0 402 044 020

company: Baudouin

Values only apply to test nozzle-and-holder assembly

engine: DNP 4

1 688 901 019 and fuel-injection test tubing 1 680 750 067

107 kW (145 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,80-2,90}{(2,75-2,95)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca. 30	100	min. 9,2	325	1,1-1,3
ca. 60	11,6 4,0 1150	940-950 1000-1030 0-1,0				350-440 (3a)	350	7,6-7,8	500 750 900	3,1-3,8 6,0-6,4 8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	197,0-199,0 (194,0-202,0)	940-950*	-	-	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.83

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Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 13,2 a

2. Edition

En

FES 5 P 120 A 320 RS452 RQV 350-900 PA 618

supersedes 2.83

company: Baudouin

engine: DNP 5

1 - 2 - 4 - 5 - 3 je $72^{\circ} \pm 0,5^{\circ}$ ($\pm 0,75^{\circ}$)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 402 045 025

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $2,8-2,9$ $(2,75-2,95)$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca. 30	100	min. 9,2	325	1,1-1,3
ca. 60	11,6	940-950					350	7,6-7,8	500	3,1-3,8
	4,0	1000-1030							750	6,0-6,4
	1150	0-1,0				350-440			900	8,0

Torque control travel a = " mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	197,0-199,0 (194,0-202,0)	940-950*	-	-	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 c

2. Edition

En

PE 6 P 120 A 321 RS 359 RQV 275-1200 PA 538
Komb.-Nr. 0 401 856 148
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 4.81

company: RVI

engine: MID 06.20.30
140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,5-3,6}{(3,45-3,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,5-9,6	13,0-13,2	0,5(0,9)			
275	4,6-4,8	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1280	15,2-17,8	-	-	-	ca. 9	100	min. 6,2	275	1,1-1,3
ca. 63	8,5 4,0 1450	1240-1250 1300-1330 0-1,0					275	4,6-4,8	950	5,6-5,8
									1200	7,6-7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	130,0-132,0 (127,0-135,0)	1240-1250*	-	-	100	190,0-210,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

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Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 18,2 b

1. Edition

En

PE 10 P 120 A 520/4 LS 3830 RQV 250-1150 PA 668-7

1- 8 -7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company: MAN

engine: D 2840 LE

463 kW

MAN-Nr. 2-7668

Komb.-Nr.

0 401 849 715

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 4,2-4,3 \\ (4,15-4,35) \end{matrix}$ mm (from BDC) Cy1.10; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,2+0,1	20,5-20,7	0,5 (0,9)			
250	7,0-7,2	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min. 8,6	350	2,0-2,4
ca. 66	11,2 4,0 1450	1190-1200 1340-1370 0 - 1,0					250 405-465=2,0	7,0-7,2 2,0	750 1150	6,1-6,3 8,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	205,0-207,0 (202,0-210,0)	1190-1200 *	-	-	100	190,0-210,0 (186,0-214,0)	-	-
					250	17,0-23,0 (14,0-26,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.60

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Testoil-ISO 4113